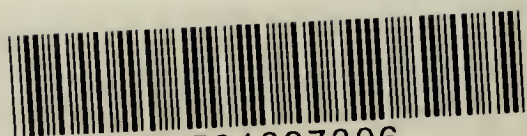


Report for the year 1976

Commissioner
of
Public
Health

Western Australia

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REPORT of the Commissioner of Public Health for the year 1976

Presented to both Houses of Parliament

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The Honourable K. A. Ridge

MINISTER FOR HEALTH

Sir,

I have the honour to submit the Report of the Department of Public Health for the year 1976.

The year 1976 was characterised by a steady growth and expansion of preventive health services in Western Australia. Although particular attention is drawn to a number of reports, all branches of the Department have worked conscientiously and efficiently throughout the year.

Regionalisation of all possible services is being continued and in some areas is complete.

JAMES COLUMBA McNULTY,

M.B., B.C.H., B.A.O., D.I.H., D.P.H., F.A.C.M.A.

Commissioner of Public Health.

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LEGISLATION

A number of legislative amendments were undertaken during the year. The major changes were:—

Acts

Health Act—No. 101 of 1976, changes to the Pesticides Advisory Committee; providing for the Laboratory notification of cases of venereal disease; and providing for the Minister to acquire or lease land for specific purposes.

‘Medical Act No. 70 of 1976 basically related to changes in fees for registration, for the restoration of names to the register and to limit registration to medical graduates resident in Western Australia’.

Nurses Act—No. 130 of 1976, provides for the inclusion on the Board of two nursing aides.

Occupational Therapists Act—No. 39 of 1976, amends the constitution of the Board and requirements for registration.

REGULATIONS

New regulations were prepared concerning:—

Midwives Regulations GG 17/9/76—controlling the activities of midwives.

Noise Abatement (Appointment of Inspectors) GG 20/2/76—conditions under which noise inspectors may be appointed.

Noise Abatement (Royal Showgrounds, Claremont) GG 10/12/76—conditions under which speedway racing may be undertaken at the showgrounds.

Amendments were also made to:—

Cemeteries Regulations GG 20/2/76.

Cremation Regulations 28/5/76.

Dental Rules 20/8/76.

Health—Food and Drug Regulations 20/8/76, 10/9/76, 10/12/76.

Maternity Home Regulations 25/6/76.

Meat Branding Regulations 12/3/76, 10/12/76.

Offensive Trades Regulations 6/2/76.

Piggeries Regulations 15/2/76, 12/3/76, 11/6/76.

Medical Regulations 12/3/76, 20/8/76, 24/12/76.

Nurses Regulations 12/3/76, 19/11/76, 17/12/76.

Optometrists Regulations 12/3/76.

Physiotherapists Regulations 25/6/76.

Poisons Regulations 15/4/76.

Radioactive Substances Regulations 16/1/76.

STATE HEALTH LABORATORY SERVICE

Dr. Blackman has provided a most detailed and comprehensive report on the activities of this Service. He draws attention to the increasing work load due to increasing demands in the clinical areas and the growth of branches of the Laboratory in mining and country industrial areas. Despite this growth there has been a gratifying and noteworthy containment in costs, but there is an inherent danger in an uncontrolled rate of growth and its possible adverse affects on standards.

In the metropolitan area there are now 7 Government hospitals with laboratory facilities on site and 17 fully equipped country laboratories at regional and other centres. Three new laboratories have been commissioned this year—Katanning, Newman and Tom Price, and there are now 34 branch laboratories of various sophistication.

Housing for staff at remote areas and accommodation at the central laboratory continue to pose problems.

The purely Public Health work of the laboratory although now smaller in comparison to the clinical area, continues to play a vital and supporting role in very many of the activities of other branches of the Department.

Hospital and laundry and linen surveillance for the Medical Department has been extended and a Committee has been preparing recommendations on the standardisation of disinfectants.

TUBERCULOSIS CONTROL BRANCH

Dr. Porter reports a very satisfactory situation in regard to pulmonary tuberculosis. There was a fall in the total number of new cases notified in 1976 and this fall was out of proportion to that of previous years. He indicates that this may have been associated with a reduced migrant intake in recent years. However, new cases are now apparently being detected at a slightly more advanced stage and this may be associated with the cessation of the compulsory community service after 1972. It would be unwise to draw any particular inference from these figures at this time.

This year marks the end of the Commonwealth/State Agreement on Tuberculosis which was so successful in virtually ending the threat of that disease as a major public health problem in Australia. As the statistics in the report indicate, tuberculosis is still a problem and special surveillance and special facilities will be required for many years.

For the third successive year there was no newly diagnosed case of tuberculosis in miners. When one considers the historical role of pulmonary tuberculosis, "miners' phthisis" as a disabling and frequently fatal disease of gold miners, this is noteworthy.

VENEREAL DISEASE CONTROL BRANCH

Increasing notifications of venereal disease has made this a very active branch in recent years but Dr. Newnham reports perhaps for the first time a slight fall in the total number of notifications of new cases. Although it is reassuring that there has been no increase, the slight fall must not lead to complacency. Compulsory laboratory notification may lead to an apparent increase in notifications in 1977.

During the year a Co-ordinating Committee for the control of venereal disease was formed with Dr. D. D. Letham as Chairman. This Committee has representations from the Health Education Council, Department of Education, State Health Laboratories, King Edward Memorial Hospital, Royal College of General Practitioners and Community and Child Health Services. It has already proved a very effective tool in ensuring a comprehensive and co-ordinated approach to this serious public health problem.

COMMUNITY AND CHILD HEALTH SERVICES

Dr. Ann Troup, who had been appointed Director of Community Health Services following Dr. Holman's appointment as Deputy Commissioner of Public Health, regrettably resigned from the position. Dr. R. W. Roberts who had been Director of Child Health Services was appointed Director, and it was decided to amalgamate the Community Health and Child Health Branches under one medical and administrative structure. He reports that although this did not occur until the later part of the year, already there has been progress in eliminating duplication of effort and service in several areas.

The end of 1976 marks the completion of 5 years of field operations for Community Health Services and it is difficult to precis the annual reports which have been made by the Branch. The reports clearly show the tremendous progress which has been made in promoting the health of the Aboriginal people. An interesting development has been in special projects. A health care delivery system based on a caravan clinic was provided for itinerant grape pickers during the grape-picking season. The service on the tea and sugar train along the Trans-Australian Railway Line has been increased to provide monthly visits, and this improvement has been very well received along the Transline.

The Child Health section has not suffered by the amalgamation, in fact, the role of the regional officers has been changed to embrace responsibilities for additional public health duties. There has been a further improvement in the infant mortality rate, but the rate in rural areas is still cause for concern, reflecting the problems of long distance, isolation from sophisticated medical facilities and aboriginal health care. The figure for Perth metropolitan area is excellent and compares very favourably with world standards.

There has been a steady increase of referrals to the Assessment Centre since it commenced in 1974. The major problems referred are behavioural and emotional disorders, intellectual delay and language delay. A new Centre is under construction, and will be completed by late 1977.

COMMUNITY HEALTH PROGRAMME

Dr. Holman has accepted personal responsibility for the success of the Community Health Programme and, as in previous years, it is recommended that the full report be read.

The programme has undergone a process of consolidation and review during 1977 and the Commonwealth has initiated a devolution of responsibility for administrative detail to the Department. The report lists the various projects administered by Mental Health Services, Medical and Public Health Departments, the Alcohol and Drug Authority, the Health Education Council and other voluntary and semi-voluntary organisations, and these provide an extraordinary variety of aspects of the health care delivery system.

Perhaps one of the outstanding achievements of this programme has been the manner in which it has involved other agencies in the health and welfare area and for the degree of co-operation and co-ordination which has developed.

The Community Health Programme Committee includes Directors of Branches in the Public Health Department, the Senior Officers of the Medical Department and Mental Health Services and most recently the Community Welfare Department. Close accord has also been established with officers of the Commonwealth Health Department and officers of the Hospitals and Health Services Commission.

DENTAL HEALTH SERVICES

Again there has been a particular extension and expansion of Dental Health Services. As Mr. Prichard's report illustrates, there are very few areas in Western Australia untouched or unattended by officers of his Branch. Nearly 18 per cent of enrolled primary school children now receive full preventive dental health care by Dental Therapists under the supervision of Dental Practitioners. If funding continues at its present level, it is anticipated that all primary school children will be served by the early 1980s.

During the year the administration of the service moved into a new administration and stores building in Como and the School of Dental Therapy at Warwick and 28 Dental Therapy Clinics were completed.

NURSING ADMINISTRATION SECTION

Miss Beard, Principal Matron, draws attention to the continuing oversupply of registered nurses and registered nursing aides in the metropolitan area and in some country districts. However, there are problems in distribution of nurses and serious staff shortages in isolated areas.

The large number of students applying to the hospitals for nurse training has made the office of the Nurse Recruitment Officer redundant. Miss Beard pays a particular tribute to the nursing service personnel who maintain high standards of practice in situations of isolation (geographic, social and professional) and in difficult climatic conditions.

Community Nursing under Miss Reid is beginning to achieve rationalisation and cohesion of nursing services in the Public Health field.

OCCUPATIONAL HEALTH AND CLEAN AIR

Under Dr. Cumpston's direction, the Occupational Health Division provides a consulting service to other Government Departments and to many areas of the manufacturing and mining industry. Occupational Health Centres have been an interesting development in recent years and there are now approximately 45 nurses engaged in the practice of Occupational Health in many types of industry such as engineering, abattoirs, banks, printing offices, oil rigs and the mining industry. There has been an increase in enquiries and complaints concerning community noise problems. These are preferably referred to the Local Shire or City Council, but specialist advice and assistance is supplied by the Branch.

The Branch has commenced courses of instruction designed to assist practising Health Surveyors to measure, evaluate and control community noise. Management in industry is becoming increasingly aware of the importance of hearing conservation and a very great deal of work has gone into the preparation of draft regulations to prevent hearing loss from industrial noise.

The Clean Air Division describes its activities under the monitoring of air pollution, specific investigations, advice on air pollution control complaints, education and statutory duties. The appendices contain comprehensive detail on the results of the Division's work and should be studied by interested persons.

STATE X-RAY LABORATORY

Mr. Barry King reports at some length on the new activities of the laboratory following the proclamation of the Radiation Safety Act. The extent of these may be gauged by the sub-committees which have been set up under the new Radiological Council which includes a Medical Advisory Committee, Dental Advisory Committee, Industrial Radiation Committee, Non Industrial Radiation Committee and the Chiropractic Examining Committee. The Council and its Committees have worked hard to draft the necessary new regulations.

Education of users of radiation, particularly in industry, continues to be an important part of the Division's work.

Mr. King points out that poor standards of operation of radiation producing equipment, poor observance of radiation protection procedures and occasional unwarranted concern about the hazards of radiation are often the result of lack of knowledge of the effects of radiation and the lack of training in the use of the equipment. The appointment of Mr. L. M. Davies to a new position as Radiation Protection Officer, Perth Medical Centre, has been a major advance in the promotion of radiation safety on that site.

During the year a nuclear powered warship visited the naval base at Garden Island. A Joint Committee of Commonwealth and State Officers was formed to deal with any possible emergency. No significant increase in levels of radioactivity or gamma radiation were detected during or following the visit.

LIBRARY AND TECHNICAL INFORMATION SERVICE

Dr. John Woolcott retired as Medical Officer in charge during 1976 after 26 years of service in this Branch. Many well deserved tributes have been paid to Dr. Woolcott.

He was actively associated with the Health Education Council, the Australian Public Health Association, the Home Safety Division of the National Safety Council and very many other community groups. His work in establishing and developing the Technical Information Service throughout the Public Health Department and the Medical Department will remain as a memorial to his knowledge, ability and achievement.

The necessary reorganisation after his departure has led to the creation of a Library Section under Mrs. B. Proud and a Technical Information Service under Mrs. Davis. Happily under their joint management the Library has been able to continue the service developed by Dr. Woolcott.

HEALTH SURVEYING BRANCH

Mr. Slattery has provided a detailed report and under a number of headings illustrates how his Branch maintains its essential function in the management and control of environmental hazards relating to human health.

During the year there was a review of all the Regional Health groups. These groups are created in rural areas where a Local Authority does not require a full-time health supervisory service, it can join one or more other local authorities to share the services of a health officer and the associated costs. The apportioning of the officer's time and ensuring an equitable financial contribution from each of the affected local authorities poses continual problems. Increasing development and expansion of services in the north-west has also led to necessary changes in administration.

During 1976 the meat industry was seriously affected by drought requiring the slaughter of a large number of animals at licensed meat works. To prevent spoiled or contaminated meats reaching the public, a surveillance programme was introduced and maintained until the situation ended.

During the year 283 consumer complaints in regard to foods or conditions of premises or hygiene of personnel were received and investigated. The report details the periodical, regular or special sampling programmes conducted by the Department itself or in association with the National Health and Medical Research Council.

VITAL STATISTICS

Vital statistics continue to be used to some extent as indicators of Public Health and social trends. In this, a census year, it is opportune to comment on trends since the previous census in 1971.

The population increase of 2·7 per cent per annum during 1971–76 is one half as great as during the previous quinquennium (4·3 per cent per annum), reflecting a decrease in immigration and the birth rate. The highest ever birth rate recorded in Western Australia (23·3) occurred in 1971. By 1976, this had dropped to 17·66, the lowest since World War II.

VITAL STATISTICS (BIRTHS, DEATHS) (a)

	1971	1972	1973	1974	1975	1976
Mean Population—						
Males	537 000	550 600	559 600	572 600	585 900	596 808
Females	507 100	521 800	532 300	546 100	561 300	573 554
Births—						
Males	12 498	11 337	10 557	10 282	10 460	10 663
Females	11 741	10 840	9 953	9 925	9 878	10 007
Total	24 239	22 177	20 510	20 207	20 338	20 670
Birth rate per 1 000 of Mean Population	23·22	20·68	18·78	18·06	17·73	17·66
Deaths—						
Males	4 536	4 317	4 586	4 550	4 701	4 480
Females	3 270	3 124	3 259	3 228	3 271	3 260
Total	7 806	7 441	7 845	7 778	7 972	7 740
Death rate per 1 000 of Mean Population	7·48	6·94	7·18	6·95	6·95	6·61
Natural increase rate per 1 000 of Mean Population	15·74	13·74	11·60	11·11	10·78	11·05
Infant Mortality per 1 000 Live Births—						
Perth Statistical Division	17·0	13·1	16·0	13·1	11·2	10·9
Rest of State	23·2	20·6	25·1	22·2	17·5	17·4
Whole of State	19·1	15·7	19·2	16·2	13·3	13·2
Stillbirths (b)—						
Perth Statistical Division	194	173	173	(c) 170	146	156
Whole of State	298	258	270	274	236	242
Stillbirth rate per 1 000 total births	12·15	11·50	12·99	13·38	11·47	11·6

(a) Includes events among the total population, including Aborigines.

(b) The term "stillbirth" for registration purposes refers to a child not born alive, of at least 20 weeks gestation, or at least 400 grammes weight.

(c) Revised.

Note: Rates have been revised as a result of preliminary revision to the mean populations on which they are based.

The death rate, which had been rising slightly since 1971, dropped to 6·61, the lowest in the five year period. However, as the Australian Bureau of Statistics tabulates deaths by year of registration, not occurrence, this small numeric decrease may be an artifact of the registration procedure. Nevertheless, it is important that the death rate is not increasing, but is relatively stable.

Infant mortality has dropped dramatically, from 19·1 in 1971 to 13·2 in 1976. This drop occurred in both the rural (23·2 to 17·2) and metropolitan areas (17·0 to 10·9), and is indeed a gratifying improvement, indicative of improved Community Health Services available during the first year of life in Western Australia.

HEALTH STATISTICS

The Health Statistics Branch, under Dr. Marlene Lugg, is probably the leading Branch of its kind in Australia. Dr. Marlene Lugg's report outlines its main activities. The Branch serves the Medical and Public Health Departments as well as Mental Health Services and a number of Statutory bodies. The data collected and processed is invaluable in research and planning health care delivery systems in Western Australia, but it must be admitted in many areas poses more questions than answers.

During 1976 there was again a further increase in total hospital discharges and accidental injury continues to be the overall leading cause of admission to hospital in Western Australia. 50 per cent of all patients discharged had at least one surgical operation during their hospital stay and this ranges from a low of 35 per cent in Government and Board Hospitals to a high of 76 per cent in Private Hospitals.

With the co-operation of the Medical Board and the Nurses' Registration Board statistical questionnaires will be incorporated with annual re-registration during 1977. The results will be analysed and used as a basis for manpower planning.

There are also briefer reports by Dr. R. Allen, Mr. W. M. Griffiths and Mr. J. Edinger. I am indebted to these and to all the other staff members who play their part in the efficient operation of the Department of Public Health. I wish to thank them for their ready help and loyalty throughout the year.

I would also like to thank the very many persons from other Departments and from other non-Government agencies who have assisted during the year and to the many who serve so well and often thanklessly on the various statutory and non-statutory committees administered by the Department.

Appendix I

State Health Laboratory Services

V. Blackman,
M.B., B.S., M.R.C.S., L.R.C.P., F.R.C. Path., F.R.C.P.A., D.P.H., D.C.P.
Director

1. INTRODUCTION

After the changes of 1975 and despite the economic climate of the times, 1976 proved to be a year of quiet but sustained growth in the work of the laboratories. Whereas a few years ago, increased work loads were an expected and common feature of most laboratories year by year, and one that was greeted with some pride even to the extent of pointing out the exponential nature of such growth, today it is realised that the same sustained growth level is fast becoming an economic nightmare and a cause of concern to medical planners and financial experts everywhere. As most laboratory services arise purely as a result of demand from medical practitioners, control means cutting down request either by suggestion or administrative action. The former has been tried time and time again by various agencies in varying situations, the latter would need a strong mind and united action to have much hope of success. Its hazards, if adopted unilaterally are considerable and its effects likely to be irritating and minimal, with “shoppers” going elsewhere.

The original Medibank conception was modified significantly on October 1st by Federal legislation, but to the end of the year had not produced any marked change in pattern of testing or growth rate. Co-operation with other bodies—the University and private pathologists in particular, had never been better. The continued growth of large clinical pathology departments has meant that patient orientated work even in the Central Laboratories, now far outstrips the purely public health generated area—85 per cent of testings being clinically orientated. However, the public health work is still of fundamental importance to the State and increasing attention has been directed at some areas, for example, water supplies and their bacteriological control.

Staff increases were rigorously held within the allowed increase of 2–3 per cent despite the volume of new work. This again is tending to produce overload situations, with obvious risk to standards, another reason for anxiety at uncontrolled growth rates of work. The result of control of staff increases and general finance means that the cost per test, specimen or doctor’s request form, has fallen rather than risen during the past years, e.g.:—

				Specimens	Average cost/specimen
1974	....	....	....	399 304	\$10.68
1976	....	....	....	663 136	\$10.16

Results obtained by dividing total cost of laboratory by number of specimens.

Thus, despite inflation, cost has been contained. This is an achievement that seems worthy of note.

VOLUME OF WORK

This has been touched on in the introduction. Specimens received for analysis showed an increase in Central Laboratories of 23 per cent and in the Branch Laboratory Service of 41 per cent, reversing the previous trend when Central Laboratories showed a bigger increase than branch laboratories. The increases were fairly general; the only sections showing a fall in Central Laboratories being Mycobacteriaceae and Radioisotopes. Noteworthy were the large increases in clinical bacteriology, venereal disease specimens, toxicology and histopathology. Not only does volume increase, but complexity of testing and urgency of advising also become more obvious. Thus in toxicology, whereas a few years ago the problem was the identification of one of a

comparatively small range of drugs very often in suicide or accidental overdose situations, now repeated chemical analysis is often needed as the only way to monitor treatment in the acutely ill.

In branch laboratories, the increase has been 40·6 per cent in work load, partly due to the metropolitan laboratories in recognised non-teaching hospitals having a full year's work for the first time in our service. But excluding this aspect, there have been remarkable increases especially in the industrial areas—Geraldton, Dampier, Port Hedland etc., and there is an undoubted need to proceed with the establishment of laboratories at Newman, Tom Price and Collie, to mention only three places.

2. COMMON SERVICES

Those services providing the necessary support facilities for sections engaged in specialist work.

ADMINISTRATION—FINANCE

There were no important staff changes in the administration during the year. Various proposals in depth were made for the regionalisation of the Branch Laboratory Service, development of laboratory services in the Goldfields, proper functioning and control of mortuaries, and future conduct of services to metropolitan non-teaching hospitals. The Director continued his membership of the Laboratory Users' Liaison Committee, an advisory body which considers proposals relating to combined laboratories and provides advice variously to the Commissioner of Public Health and Medical Services, the Board of the Sir Charles Gairdner Hospital and the University of Western Australia. The Director also served as the representative of State on the Pathology Working Party dealing with Accreditation of Laboratories throughout the Commonwealth, which will attempt to foster good pathology services and incidentally prevent abuse, financial and otherwise, in the sphere of pathology.

There have been no changes to the financing of the activities of the laboratories, the cost sharing arrangement between the State and Commonwealth remain the same.

BRANCH LABORATORIES

The work done in branch laboratories increased by 41 per cent in 1976 compared with 1975. This increase mainly followed the assumption of pathology services in the metropolitan non-teaching recognised hospitals, and the increase of work in mining and industrial areas.

The State Health Branch Laboratory Service has continued to expand in both metropolitan and country areas according to demands and availability of staff and accommodation.

In the metropolitan area, there are now seven Government hospitals with facilities on site with several other less acute areas being covered by courier services. Economy in both staffing and equipment has resulted. There is also a public health orientated laboratory staffed at the Midland Abattoirs.

Seventeen fully equipped country laboratories are in existence at regional and other centres. Nine further areas are provided with collection points, the technical estimations are then performed by the nearest branch laboratory.

Three laboratories have been commissioned this year—(Katanning 16/8/76, Newman 6/9/76, and Tom Price 6/9/76). There are now thirty four branch laboratories of various sophistication.

Administration and technical services have been provided centrally to date with some inconvenience due to the distances involved. Senior personnel carried out on the spot reviews of each area on at least two occasions over the year with a further visit by the Director in company with the Principal Technologist.

A high standard of work has been maintained with centrally controlled quality control programmes and revitalisation programmes to keep technologists abreast of new developments.

Laboratory accommodation has been upgraded in several areas and further improvements are anticipated.

Staff housing through the Government Employees Housing Authority continues to be a problem. Lack of houses and, in some cases, grossly sub-standard accommodation exists.

STORES

The Stores, like other sections, has been plagued by a lack of storage space. The provision of a large storage area, reasonably close to the Central Laboratories is essential.

The continual changing of the clerical staff has also created problems. As soon as a clerk gains some expertise in the area he is shifted elsewhere, presumably as a promotion move. A much better arrangement would be to have staff promoted within the Stores itself, giving some continuity of service and retention of expertise.

The Stores at present are operating without any data retrieval system, either manual or electronic. An automated data handling system to control the acquisition and distribution of quality controlled reagents and media, short shelf life biological substances, radio active material and general laboratory stores and equipment is being planned by the Health Computing Service. Currently the Stores service 104 clients throughout the State.

TRANSPORT AND COMMUNICATION

Transport arrangements have not been altered.

A facsimile unit installed at Dampier laboratory, linked to units at Roebourne and Wickham, enables reports to be quickly received by medical practitioners at these centres.

STAFF

Staff changes are shown below:—

Position				Recruited	Resigned	Retired	Deceased
Pathologist/Microbiologist	....	....		1	1		
Medical Registrar	....	....	....	1	2		
Senior Technologist	....	....	....	1			
Technologists	....	....	....	26	16		
Laboratory Assistants	....	....	....	37	20	1	
Laboratory Attendants	....	....	....	9	11		1
Nurses	....	....	....	1	6		
Clerks	....	....	....	3	2	1	1
Typists	....	....	....	3	4		
Storemen/Security Officers	....	....	....	6	3	2	
Clerical Assistants	....	....	....	6	6		
Autopsy Assistants	....	....	....	1			
Animal House Attendants	....	....	....	1	1	1	
Lab. Tech.-in-Charge	....	....	....		2		
Technical Officer	....	....	....	1			
Cyto Technician	....	....	....	1			
Senior Photographer	....	....	....		1		
Technical Assistant	....	....	....		1		
Total	....	....	....	98	76	5	2

Important changes of senior staff are as follows:—

Dr. A. Henderson, Clinical Microbiologist, ex Scotland, commenced duty 24/5/76.

Dr. K. Williams, Pathologist/Cytologist, resigned from full time service 31/12/76.

Dr. M. Joachim, Registrar, transferred to Child Health.

Dr. J. Carroll, Registrar, commenced on 8/1/76, and resigned 31/12/76 on completion of his course.

We regret to announce that two members of staff, Mr. Frank Le Faucher and Mrs. Lucy Charles, died during the year.

STAFF HOUSING

The problems in this area still exist, the majority of houses being considered sub-standard, particularly in the North. New houses under construction are at Narrogin (2), Manjimup (1), and South Hedland (1). A request has been made for housing at Newman, Tom Price, Collie and an additional house at South Hedland.

ACCOMMODATION—CENTRAL LABORATORIES

Detailed planning was undertaken for the completion of the State Health Laboratory Services North Block; this will house the Biochemistry, Histopathology, Cytology, Cytogenetics, Serology, Library, Haematology and University Units. It is anticipated that tenders will be called in October 1977 for construction to commence in January 1978, with completion in 1980.

A request has been made for the provision of additional storage space and it is anticipated that this will be provided early in 1977.

The steam autoclaves installed on the commissioning of the South building are still not fully operative. Despite numerous attempts to remedy this state of affairs, little effective action has yet been achieved.

There is a dearth of staff facilities in the North buildings; the lack of female rest rooms, of suitable and adequate tea rooms and of recreational facilities are the subject of continuous complaints from staff members. The air-conditioning system has required expensive overhauls with replacement of costly items of equipment such as balanced fans and renewal of bearings.

The hut complex is still in use, but it is anticipated that by 1980 when the North building is completed it will be possible to transfer the huts to branch laboratory areas.

EQUIPMENT

In the effort to standardise equipment throughout the Service, a balance has had to be struck between updating instruments and maintaining the use of existing ones. Regular assessment of newly available instruments is made, and those found suited to the department's needs are given trial periods in a relevant laboratory. As a consequence of these trials some of the regional centres and larger metropolitan laboratories are now using better instrumentation which contributes to the efficiency of those areas. Standardisation means a lower average cost all round and also produces the dividend that staff moved from laboratory to laboratory find much the same equipment and methodology wherever they go.

INSTRUMENTATION

The work generated in the laboratory now for the service of equipment is far too great for the unit to handle. A large proportion of this work is therefore sent outside the unit for completion. This situation caused substantial delays in the equipment being repaired and put back into service. The growth in numbers and sophistication of laboratory instruments has been responsible for this situation. At present the unit has a lack of expertise in electronics. This problem should be overcome with the appointment of an appropriate person to fill a newly created vacancy in the instrumentation section.

Lack of bench space and storage space continues to be a problem. A new instrument card filing system was introduced during the year. This system provides a profile of every item of equipment including each item's maintenance history, warranty period and location of that item. This is one of the requirements of the proposed laboratory accreditation scheme. The equipment replacement service, providing replacement items of equipment on demand is now functioning satisfactorily.

SPECIMEN RECEPTION AND REPORT DISTRIBUTION

This area is becoming of increasing importance with the growth of laboratories. Most complaints received relate to misdirected reports, the occasional lost specimen, delays when specimens are transferred to other units, etc. There is no doubt that the efficient running of a laboratory involves a hard look at the organisation of this area, and an officer with sufficient administrative skill, staff handling expertise and technical knowledge needs to be in charge of it.

LIBRARY

The services of the library were maintained during the year and the provision of a librarian from the Public Health Department library has meant that a high standard of efficiency is assured.

REAGENT PREPARATION

This unit is still housed in the Swanbourne Hospital due to lack of space in the Central Laboratory. Demands for reagents used by automated equipment have increased since the introduction of new analysers in the Biochemistry laboratory. The 24-hour service has also resulted in an increase in the automated reagent requirements. The output of automated reagents has nearly doubled in the last twelve months.

The demand for manual reagents increases as the work load and range of tests in the branch laboratories increases.

The only real problem that exists at present is the lack of staff in the reagent preparation laboratory for the washup and maintenance of the glassware. All glassware is transferred to Central Laboratories for cleaning. Hopefully this problem will be overcome in the new year should an extra staff member become available.

COMPUTERS

The Clinical Chemistry computer is now not able to handle the work load, including specimen identification and updating of reports. A recommendation for its replacement was made by the Health Computer Advisory Service. Other areas where computer facilities will soon be needed for data storage and file searching include Cytology, Cytogenetics, and Virology, while the Radioisotopes section will need a faster off-line, or even on-line system.

ELECTRON MICROSCOPY

The last twelve months has seen the establishment of a S.H.L.S. Electron Microscopy Unit. This unit is comprised of a preparation room, which is now complete and functioning, and a Philips 301 electron microscope which is housed in the University unit on the same site.

The S.H.L.S. Electron Microscopy laboratory was established as a “service unit” to assist other departments of the Service. The main avenues of work are from the Virology, Histopathology and Microbiology laboratories, and electron microscopy is often used to give the rapid diagnosis of viral disease or the exact nature of tissue type under study.

Electron Microscopy—22/6/76 to 20/12/76

Histopathology specimens	16	Microbiology specimens	8
Total blocks	115	Total prints	18
Total prints	127	Virology grid	700

QUALITY CONTROL

Haematology. Initially, quality control surveys were sent to 21 State Health, metropolitan and country laboratories. However, with the opening of new country laboratories and the requested participation of other hospital and private laboratories, a total 32 are included in these surveys at present.

At the same time, quality controls consisting of Hb and PCV’s have been sent to the five minor laboratories of Margaret River, Collie, Kununurra, Mount Newman and Mount Tom Price.

Results generally have been within the limits of accuracy and acceptability. Slide evaluation mainly sent for cell identification, has caused most problems, but as the slides are retained in the laboratories further checking from the results sheet will have undoubtedly assisted to correct these faults. One specific clerical error was observed.

Bacteriology quality control was continued throughout the year; laboratories participated fully and results were analysed centrally. Some research had to be done in ensuring that organisms remained viable during transport from central to branch laboratories to ensure comparability. Again, results were generally satisfactory and acceptable.

Clinical Chemistry quality control was continued using an external commercial system, the results being monitored in the combined unit of Clinical Chemistry. Again, variations were pinpointed early and remedial action taken where necessary.

FIRE AND SAFETY

Throughout the year staff have been required to attend the revision Fire and Safety courses run by the Perth Medical Centre. Whenever possible, those country staff members who have been in Perth at the time have been included. There is, however, a need to programme a basic concept of fire and safety to fit in with each of the regional hospitals served by the State Health Laboratories.

During July, each of the units of the laboratories engaged in an “evacuation” drill of their section. The exercises were most successful, most sections being cleared within 2½ minutes. When new equipment is requisitioned, and where old equipment is repositioned, a review of safety measures will be made to ascertain no new dangers are introduced.

Modifications were made to a Laminar flow safety hood in Virus laboratory as an added precaution against eye injury from exposure to ultra violet light. In other areas, the lamps have been temporarily removed pending modifications to their ultra violet light systems.

IN SERVICE COURSES

The courses arranged during 1976 are listed below:—

1. **Nursing Sisters/Assistants**
September 6th–17th Sister Levien, Newman Laboratory.
October 4th–15th Sister Rye, Tom Price Laboratory.
December 14th–24th Miss Coleen Gray.
2. **Post Graduate**
August 16th–20th Mr. F. Watson, Carnarvon.
Mr. C. Gulley, Bunbury.
Mr. R. Glover, Osborne Park.
3. **Orientation**
September 6th–October 5th Mr. K. Davey, Wyndham.
October 4th Mr. R. Mogyrosy, Relieving Technologist.
Miss J. Timbury, Broome.

SURVEYS

Special Projects processed all specimens arriving from the Community Health medical audits carried out throughout the State. All reports were also sent through Special Projects to the requesting doctors and computer report sheets were also prepared and sent to Community Health in Perth. As the medical audits continued progress reports were sent out weekly.

Surveys carried out in conjunction with Community Health medical audits were:—

					Commenced	Completed	Number of Patients
1.	Mt. Magnet	....	....	....	27/1	12/2	90
2.	Cue	....	....	....	16/2	27/2	112
3.	Meekatharra	....	....	....	4/3	7/4	214
4.	Wiluna	....	....	....	26/4	26/5	198
5.	Yalgoo	....	....	....	31/5	2/6	39
6.	Shark Bay	....	....	....	16/6	18/6	40
7.	Wandering	....	....	....	22/6	23/6	32
8.	Useless Loop	....	....	....	19/6	20/6	44
9.	Port Hedland	....	....	....	21/7	31/12	398
10.	Oombulgurri	....	....	....	6/10	12/10	177

All surveys carried out in conjunction with the Community Health medical audits were on people in the lower social economic group and were therefore almost totally restricted to Aboriginal populations.

Excess serum from these surveys is stored at 4° C so further testing can be done if required. Staff for bleeding were supplied for some of the above surveys.

In November of 1976 a population health survey was carried out in the areas of Kondinin, Kulin and Hyden in the South West of Western Australia. Blood and urine samples were collected from a total number of 1 287 patients. This survey ran for eight working days and six State Health Laboratory staff were used on site.

Numbers break down:—

Kondinin	....	....	....	....	368 patients	....	....	2 days
Kulin	....	....	....	....	396 patients	....	....	3 days
Hyden	....	....	....	....	523 patients	....	....	3 days

This survey was done in conjunction with the statistics department of the University of Western Australia.

REPORTS

Reports from Biochemistry, Serology and Haematology are sent to metropolitan laboratories through VRC machines before posting.

PATHNOTE

A committee was formed on 4th May, 1976, to discuss, design and set up a technical bulletin. Preliminary studies were made, and the basis of the current Pathnote laid down. After the necessary art work and printing of blanks, the first Pathnotes were distributed during the week of 26/8/76. To 31/12/76, 15 Biochemistry, 8 Microbiology, 12 Haematology and 7 general notes (total 42) were issued.

Materials used for publication include biochemistry and haematology methodology, general notes on methods used, and epidemiological data. Distribution is to all qualified staff members, with any relevant Pathnotes being available on demand. Requests for copies have been recieved from other pathology laboratories in Perth, general practitioners, local and public health officials.

During 1977 it is anticipated that this information service will be supplemented by tapes of lectures and discussions, and with slide sets.

TOURS AND CONFERENCES

Dr. Mulcahy, Cytogenetics—Mexico and Adelaide (travel at own expense).

Miss Jenkyn—Adelaide and Melbourne cytogenetics conference (Department's expense).

Mr. Wilson—Clinical Photographers convention in Adelaide (Department's expense).

Mr. Faulkner—A.I.M.T. convention in Adelaide (Department's expense).

COURSES

Mr. Fergie and Mr. Faulkner attended the Australian Institute of Management Course.

Mr. Fitzsimmons and Mr. Fullerton attended management courses at the "Doig" Centre.

3. REPORTS BY SECTIONS

CLINICAL MICROBIOLOGY LABORATORY

The routine work shows a considerable increase in turnover with 15 750 specimens received as compared with 12 000 last year. This represents an increase of 30 per cent over and above the previous year's increase of 60 per cent. Much of this work flows from the peripheral laboratories and country practices but the volume of work received from metropolitan hospitals engendered by Medibank continued to increase.

New routine tests introduced during the year included the use of fluorescent antibody techniques in the detection of *Neisseria gonorrhoeae* and *Pseudomonas mallei*. A technique adopted from Virology was developed from the serotyping of pathogenic

streptococci. The method depended on the absorption of streptococcal group-specific antisera on a strain of *Staph. aureus* with subsequent specific agglutination as the indicator. Also, counter-immune electrophoresis was put into regular use for the detection of bacterial antigens in C.S.F. in meningitis cases due to *N. meningitidis*, *Hemophilus spp.* and *Strep. pneumoniae*. The extension of this method of laboratory diagnosis is likely to be of value in bacterial infections where culture has been attempted too late in the infection or when antibiotics have already been exhibited.

An enquiry into the carriage rate of *Corynebacterium diphtheriae* by Aborigines in Western Australia resulted in the isolation of five strains from 200 persons tested. The strains were non-toxicogenic to guinea pigs. A report on the investigation has been accepted for publication by the Medical Journal of Australia.

The branch laboratories, and others, have provided a steady flow of interesting bacteria for identification. Among those received and identified were *Haemophilus aphrophilus*, *Pseudomonas pseudomallei*, *Clostridium subterminale* and *Clostridium nangenotii*.

In August a 16 year old boy in a Community Welfare Institution was admitted to hospital with meningitis due to *N. meningitidis*. Two other boys were found to be carriers and subsequent investigation traced the likely source of infection to an infant son of an occasional teacher at the Institution.

Although the Clinical Microbiological Laboratory is yet small, the work is undergoing considerable expansion in both the amount of work received and in the range of tests performed and is fulfilling its target of co-operating widely and readily with family doctors and clinics.

MYCOBACTERIA LABORATORY

The work of this reference and diagnostic laboratory has experienced a slight decrease in the number of specimens received for investigation of mycobacterial infections. This reflects a decrease in the number of cases of tuberculosis reported by the Tuberculosis Control Branch. By and large, although the volume of work in the laboratory has been reduced in the totality of specimens examined, the overall work load has increased considerably due to the development of new techniques aimed at firstly increasing the rapidity of diagnosis and, secondly, to the more definite identification of mycobacterial species.

Atypical mycobacterial species responsible for infections closely follows those of the previous year.

Mycobacterial species, other than M. tuberculosis,
isolated from patients with mycobacteriosis.

Runyon Group	Species			Serotype			No. of Cases
I	M. marinum	....	....	Marinum	....	....	3
	M. kansasii	....	....	Kansasii	....	....	2
II	M. scrofuloceum	....	....	Lunning (42)	....	....	1
	M. scrofuloceum	....	....	Ganse (43)	....	....	1
III	M. intracellulare	....	....	Not typable	....	....	7
	M. intracellulare	....	....	Boone (14)	....	....	7
	M. intracellulare	....	....	Altmann (18)	....	....	1
	M. intracellulare	....	....	Darden (19)	....	....	4
	M. intracellulare	....	....	10409 (22)	....	....	5
IV	Nil	/					
....	M. bovis	....	....	....	....	....	1
....	B.C.G.	....	....	....	....	....	3

Of interest are the three cases of skin infection due to *M. marinum*. One of these cases developed infection shortly after the tropical fish in his indoor aquarium died suddenly. He was advised to clean out his tank with hypochlorite (which he did) and to desist from keeping fish. He did not take this latter advice, however, and after a while restocked his tank. He again presented with an unhealed skin lesion on his arm and *M. marinum* was isolated from the water in the fish tank although the fish were healthy.

Improving methods for identifying atypical mycobacteria is a constant aim of the laboratory. The use of thin layer chromatography has been investigated and the results have been promising particularly with 'difficult' stains. The range of antisera for the serotyping of *M. intracellulare* has been extended and the number of previously untypable strains has been correspondingly reduced. Animal experiments had shown that there were differences in the pathogenicity of strains isolated from clinical material and a study is progressing to assess corresponding differences in the clinical picture of patients so infected.

The treatment of tuberculosis with rifampicin as a first line drug has led to the inclusion of this drug in the routine direct sensitivity tests. Although still on an experimental basis, most of the technical problems have been overcome and in the new year reports on direct sensitivity of strains to rifampicin will become routine.

Phase contrast microscopy has also been investigated on the principle that acid fast organisms stained with carbol fuchsin appear bright blue under phase contrast. The organisms are so bright that smears can be rapidly scanned and thereby reducing observation time. Smears so screened can be immediately confirmed using an ordinary light microscopy without further staining. This technique should be of particular value in examining urgent specimens. The application of this to leprosy has obvious advantages, particularly when the specimen contains few organisms.

There has been considerable increase, due to the interest of the clinician in charge of the Derby Leprosarium, in the number of split skin smears submitted of which 43 per cent out of a total of 1 142 examined proved positive. Research into leprosy particularly the response of *M. leprae* to drugs, has been hampered by the difficulty of culturing the organisms and the uncertainties surrounding the authenticity of strains reputedly grown. Recent work using the banded armadillo has been promising. Echidnas, native to Australia, are closely related to the armadillo and a colony is being built up in the animal laboratory with a view to attempting the recovery of *M. leprae* following inoculation of lepromatous tissue. It is hoped that these ant eaters will provide a useful model for immunological studies in leprosy.

Dr. E. Mackay-Scollay attended a meeting of the Bacteriological Sub-Committee of the National Tuberculosis Advisory Council in Sydney. At this meeting the Australian Department of Health's booklet "Procedures for the Laboratory Diagnosis of Mycobacterial Infection" was revised and should be available for issue early in 1977.

MYCOLOGY LABORATORY

There has been a steady increase over 1976 in the work of this section which reflects the increasing awareness of mycoses in differential diagnosis.

At the end of 1976 the Medical Mycology Laboratory moved to 267 St. George's Terrace, Perth, part of the Mount Hospital complex. This was necessitated by the expiry of lease of 12 Richardson Street.

Developmental work continued throughout the whole range of Medical Mycology. New techniques and media are tested and evaluated for their usefulness, and either adopted or discarded.

Superficial and Cutaneous Mycoses

Interest from country areas in these diseases has increased greatly during 1976. These infections are prominent in Western Australia all through the year with very little seasonal change. Of the total 6 569 specimens examined, 40·19 per cent were positive for fungal infection.

In 1976 *Trichophyton rubrum* was the predominant organism from skin scrapings and was isolated from 649 specimens. *Microsporum canis* is almost certainly more abundant in the community than *T. rubrum* and causes the common form of ringworm

seen in young children. This type of infection is more readily diagnosed clinically by a general practitioner, pharmacist or parent, and is frequently treated without confirmation of the diagnosis. Usually only the more resistant cases are referred to a skin specialist or to the Mycology Laboratory. This organism was isolated from 372 specimens in 1976.

Epidermophyton floccosum is more frequently isolated from tinea cruris than from any other type of tinea, and accounted for 411 isolates this year.

Cattle ringworm appears to be uncommon in humans in Western Australia. Only one case due to *Trichophyton verrucosum* was isolated this year and although *T. mentagrophytes* is isolated more frequently, infections from cattle are fairly rare. The majority of the *T. mentagrophytes* isolates are from feet and are not the animal variety.

T. tonsurans identifications for this year numbered 55, and more than half of these were isolated from aborigines in the north of the State.

Pityriasis versicolor is a relatively common skin infection in both aboriginals and caucasians in Western Australia and was identified from 205 patients this year.

Systemic Mycoses

These fortunately continue to be rare and the most common fungus implicated in deeper mycoses in Western Australia is *Aspergillus*, usually *A. fumigatus* but also *A. niger* and *A. terreus*.

Nocardia asteroides was isolated from four patients in 1976, in two of these cases it was associated with *Aspergillus fumigatus*. *Petrellidium boydii* was isolated from a brain abscess.

Cryptococcosis—three new cases were identified this year.

Candida and other yeasts

These continue to be very prominent. The most common pathogenic yeast continues to be *Candida albicans* which accounted for 82 per cent of the yeasts isolated in 1976. *Candida* was associated with skin infections in 469 cases ranging from paronychia to intertriginous lesions.

Yeasts were isolated from vaginal and cervical infections in 1 409 specimens and must be considered common pathogens in the field of gynaecology in Western Australia.

Routine specimens from the Family Planning, Womens' Health Care and V.D. Clinics yielded 18.09, 21.72 and 16.44 percentages positive. The most important pathogen from these specimens was *C. albicans* followed by *Torulopsis glabrata*.

Throat, mouth and tongue infections frequently involve *Candida* and 83 isolates from these sites grew yeasts in 1976.

Some country centres in the north of the State have shown interest in testing ear swabs for fungal infection and this has resulted in more than the usual number of cases of otitis externa due to fungi being diagnosed. Among other isolates from ear swabs were 57 *Aspergillus* and 26 yeasts.

Fungus Immunology

The development of the immunological diagnosis of fungal infections has met a demand; it is now well advanced and will continue to expand.

The *Candida* precipitin test commenced during 1975 was progressively improved during the early part of 1976 and developed into an accurate diagnostic test for systemic candidiasis.

Towards the end of the year we began to develop precipitin tests for *Aspergillus* antibodies and routine testing for *A. fumigatus*, *A. niger* and *A. flavus* was introduced. Work has commenced on developing precipitin tests for *A. terreus*, *A. nidulans* and a second strain of *A. fumigatus*, and these tests will be functioning in 1977.

Work has also begun on setting up a latex agglutination test for *Sporothrix schenckii* antibody and this should be operating routinely by mid 1977. Fungi such as *Sporothrix schenckii*, which were once considered to cause only subcutaneous mycoses are more frequently being found in deep mycoses and must be identified serologically in most cases as well as from biopsy and other clinical material.

CONTROL OF INFECTION—PHAGE TYPING—FREEZE DRYING LABORATORY

During the year 1 548 cultures were freeze dried and added to the collection of strains held in the laboratory. It is anticipated that in the new year the Laboratory will be recognised as an associated laboratory of the World Federation of Culture Collections.

The laboratory continues to provide a phage typing of Staphylococci service for all hospitals and laboratories in Western Australia. The unit maintains its propagating Staphylococcal strains as well as the propagating phages, and during the year experiments were carried out to improve the media used in such propagation with a consequent reduction in the number of untypable Staphylococcal strains being submitted from various sources. The number of untypable strains has been reduced from a level approaching 30 per cent to between 10 and 12 per cent. During the year 18 disinfectants or germicides were tested by the Kelsey Sykes method for evaluation of efficiency. These compounds are submitted by the Health Department after approaches from industry. Attempts have been made through the years to standardise the use of disinfectants in the hospital environment and a committee has been preparing recommendations for the Medical Department and these are expected to be introduced in the new year to all hospitals under government control.

The policy of the Medical Department in extending the use of carpets in the hospital environment has resulted in a number of investigations centreing on the microbiological testing of carpets installed in various hospitals and the type of equipment necessary to ensure satisfactory bacteriological cleanliness. As a result of these tests the laboratory has been able to make firm recommendations on procedures to be adopted where carpets have been installed.

A monthly surveillance of the State Hospital Laundry and Linen Service has been maintained throughout the year. But for occasional lapses, the Service has been found to present no hazard to the users of the linen supply.

Finally, the unit has undertaken a number of investigations of a surveillance nature in hospitals, mainly located in the metropolitan area, where cross infection has been either suspected or has been regarded as potentially explosive. This service has been particularly welcome to matrons and the hospitals' medical administration, and has done much to ensure satisfactory hospital hygiene.

MICROBIOLOGY—QUALITY CONTROL LABORATORY

Quality control samples covering a range of bacteria and intestinal parasites of medical importance, but orientated to "branch laboratory investigations", were issued regularly at approximately six week intervals to twenty three laboratories of the State Health Laboratory Services and to three volunteer extraneous laboratories. Preliminary experiments were undertaken to minimise the effect of time and temperature on the samples during transit to remote laboratories, but a few samples with sensitive organisms and mixtures undoubtedly suffered from these effects.

The diagnostic microbiological facility provided by the laboratories was assessed as formerly on the value of the results obtained in each unit from the therapeutic standpoint. The majority of tests demanded of the specimens issued were within the capacity of all laboratories to perform. However, some examples allowed a greater level of expertise to prosper than was mandatory.

Sets of organisms were sent out for specified characterization tests; these covered oxidase and catalase testing, the rapid identification of *Salmonella* and *Shigella* species by the glissuda test, gram staining and the use of sputum smears for Ziehl-Neelsen staining. Penicillin sensitivity testing, formerly found deficient, was also specifically tested using recent clinical isolates of *Staph. aureus*. The results of these were uniformly satisfactory with a sensitive strain but less efficient results were obtained with the resistant culture circulated.

All laboratories were found to have satisfactory facilities for achieving anaerobiosis as judged by the growth of *C. tetani* and *Bacteroides fragilis* on solid medium.

As anticipated, the identification of "environmental" pseudomonads proved to be too difficult for the majority of laboratories but it was expected that under normal conditions these strains if isolated at the periphery would be forwarded to the Central Laboratory for identification.

Finally, a series of samples containing a range of intestinal parasites was issued to some laboratories and the exercise will continue into 1977.

ENTERIC DISEASES LABORATORY

Salmonellosis

A total of 818 cases of Salmonellosis were diagnosed by or reported to the Enteric Diseases Unit during the year. The majority of cases occurred in the north of the State. The breakdown of serotypes involved and their geographical distribution are illustrated in the accompanying table.

Geographical Distribution of Human Cases of Salmonellosis

Perth	Southern	Eastern	North Western	Kimberley	Total Cases
219	136	35	231	187	808

In addition, 10 *Edwardsiella tarda* and a single isolation of *Arizona spp.* were diagnosed. 51 serotypes of *Salmonella* were represented in the isolations. The most frequently encountered *Salmonellae* were *S. typhimurium*, 237 (29.3 per cent) of cases, followed by *S. muenchen* 66 (8.17 per cent) and *S. chester* 57 (7.1 per cent).

Two cases of *S. typhi* were diagnosed in 1976. The first arose in January in a man of 63 who had previously contracted typhoid fever in India in 1950. The strain was phage type J.1 and was isolated from the patient's sputum while in hospital for elective cholecystectomy. The other isolation of an untypable degraded strain was made from an Indonesian woman during a visit to Northam.

An outbreak of *Salmonella* food poisoning which occurred in April was traced to contaminated salami imported from Victoria. The infections were due to *S. bovis morbificans* and 10 patients were laboratory confirmed cases. As in many outbreaks of *Salmonella* food poisoning, the number of people in which laboratory confirmation of infection was obtained was a poor representation of those at risk.

Shigellosis and Enteropathogenic E. coli Infections

A total of 721 cases of *Shigella* infections and 452 *E. coli* enteropathogenic infections were diagnosed during the year, the latter being represented by 13 serotypes.

Of the *Shigella* cases 426 (59.08 per cent) were due to *Sh. flexner* types 2 and 4 and were distributed almost equally in these two types while 199 (27.60 per cent) were due to *Sh. sonnei*.

Enteric Parasites

Giardia lamblia is the single most frequent parasite identified from faeces—972 (53.0 per cent) of 1 834 total parasite infected cases.

GEOGRAPHICAL DISTRIBUTION OF PATIENTS WITH SPECIFIC PARASITIC INFECTIONS

Parasites (by type)										
Geographic Regions	A. duodenale	A. stercoralis	E. vermicularis	T. trichiura	A. lumbricoides	H. nana	G. lamblia	Entamoeba spp.	Taenia spp.	Taenia saginata
	200	72	57	123	27	361	972	1	2	1
Parasites (by region)										
Perth	421				
Southern	405				
Eastern	9				
North Western	405				
Kimberley	594				
Total	1 834				

Environmental Studies

Considerable expenditure of time and energy was directed to environmental and public health studies in defining the reservoirs of *Salmonellae* and the potential hazards of transmission of infection to man from indirect contact with wildlife and the common use of recreational and industrial land by man and animals.

A total of 205 *Salmonella* isolations were made from captive, domestic and wild animals and birds. In wild animals the predominant serotypes were *S. muenchen* and *S. newington*. Among the domestic and captive animals the serotypes most frequently occurring were *S. typhimurium*, and *S. newington*.

Salmonella infections in seagulls or their droppings were recorded over wide areas. On Rottnest Island *S. adelaide*, *S. bovis morbificans*, *S. chester*, *S. muenchen* and *S. typhimurium* were isolated from bird droppings and in mainland areas which included metropolitan tipsites, river foreshores, ponds, wetlands, a swimming pool and reservoir environs—*S. derby*, *S. give*, *S. havana*, *S. typhimurium*, *S. adelaide*, *S. chester*, *S. anatum* and *S. orientalis* were isolated. *S. havana* and *S. coleypark* were recovered from wild ducks.

S. bovis morbificans was isolated for the first time from quokkas on Rottnest Island and together with *S. javiana* was also recovered from quokkas or water contaminated with their faeces on Bald Island east of Albany. *S. havana*, *S. oranienburg* and *S. typhimurium* were also isolated from gull droppings collected at the nearby whaling station.

S. carnac, a new serotype first isolated in 1969 from a king skink on Carnac Island, was again isolated in June, 1976—on this occasion from a carpet python examined on Abrolhos islands. The reptile was also infected with *S. bleedon*, *S. houten*, and *S. kottbus*. *S. arechaveleta* which had not previously been isolated in W.A. was isolated during the present surveillance studies from an Abrolhos Island tammar.

A particular study in the environmental area has formed the basis of a separate report in preparation for the Commissioner of Public Health and Medical Services, on Rottnest Island. Much of this work has occupied laboratory staff and resources in disproportion to the needs of developing newer techniques in the diagnosis of human enteric infections and in widening the search for causes of gastroenteritis beyond the presently recognised pathogens.

It is anticipated that on the completion of the report on Rottnest, effort will be deployed more evenly to both aspects of the work of the section. There is perhaps a place for a demarcation of responsibilities in this section of the division: an environmental studies unit working on the objectives of defining and documenting the actual potential and speculative hazards to the health of the community afforded by the environment and its uses, and a unit concerned more with the provision of a fully comprehensive diagnostic and immediate public health function. The only alternative to such a dichotomy under the present staffing restrictions would be to severely curtail the field excursions of present laboratory personnel and thereby attain a just balance in work load and priorities.

WATERS AND EFFLUENTS

S. havana, *S. derby*, *S. anatum*, *S. adelaide*, *S. typhimurium* and *S. give* were the major strains isolated from abattoir or meat processing effluents, and with the addition of *S. bovis morbificans*, these serotypes were also prevalent in human infections and metropolitan sewerage. There was a close relationship between these isolations and serotypes recovered from ponds, lakes, tipsites, river foreshores and wetland areas frequented by seagulls. *Salmonella* were also isolated from edible mussels in river and estuarine areas frequented by birds.

Monitoring studies undertaken jointly with the Metropolitan Water Board, and employing large volume sampling techniques resulted in the isolation of *S. give*, *S. havana*, *S. muenchen*, *S. orion*, *S. orientalis* and *E. tarda* from some service reservoir waters, but not from post chlorinated waters sampled from the distribution system.

Salmonella were also isolated from a number of country water supplies, and in the Pilbara region, *S. bahrenfeld*, *S. champaign*, *S. oranienburg*, *S. rubislaw*, *S. treforest* and *S. welikade* were isolated from bores, storage tanks or delivery systems. One problem was traced to leaking supply lines and contamination from frogs (*Litoria*

rubella) in storage tanks. *S. chester*, *S. lansing*, *S. muenchen*, and *S. rubislaw* were isolated from individual frogs and from waters contaminated by these amphibia. Salmonella were detected in catchment and storage tank waters on Rottnest Island.

FOODS

The laboratory continues to receive samples of food reputedly the remnants or aliquots of meals consumed by individuals or families who have developed gastro-enteritis. Very rarely are any clinical specimens forthcoming for bacteriological examination. There is room for a better appreciation by medical practitioners and health surveyors of the need to submit both food and specimens whenever possible in order to establish an aetiological linkage.

Routine examinations of frozen prawns imported to Western Australia were adapted to establish satisfactory standards with a view to gazetting regulations in 1977 for bacteriological safety of such imports.

The bacteriological survey of “take-away-foods”, under the aegis of the N.H. and M.R.C. Food Microbiology Sub-Committee, continued and the results are expected to be analysed at the end of the study in March 1977 when a report will be submitted to the Food Standard Committee.

Dr. E. Mackay-Scolly attended two meetings of the sub-committee in Sydney during the year as well as a meeting of the DS/3 committee of the Australian Standards Association concerned with the establishment of microbiological standards for dairy products.

MEDIA PREPARATION UNIT

The volume of media prepared in this section increased by 38·4 per cent over the output of 1975, while an estimate of the production for 1977 will represent a 15·5 per cent increase.

	1975	1976	1977 (estimate)
Poured petri dishes	670 000	800 000	1 026 528
Tubes/bottles of media	880 000	1 345 500	1 452 000
Total litres of tubed and bottled media	24 080	31 800	42 120

The section supplies a wide range of media not only to the central and branch laboratories of the Service, but also to the University Department of Microbiology and King Edward Hospital. Some specialised media is also issued to Royal Perth and Princess Margaret Hospitals.

Increasing pressure of work load and limitations of space all contribute to an uneasy staff situation. Time lost through sickness is high in this section. The deficiencies in autoclaves, recognised by laboratory staff at the time of occupation of the accommodation, serve but to compound the difficulties.

VIRUS LABORATORY

The work of the Virus Laboratory is very much under the influence of the world-wide advances being made in virology. Application of fundamental research has led to the development of techniques no longer borrowed from bacteriology. Methods exist today for the certain diagnosis of active and recent viral infections with a consequent appreciation by clinicians of the value of having investigations carried out, as is reflected in their increased use of the laboratory facilities. The extending use of techniques which demonstrate the presence of viral specific IgM, which is particularly vital in women suspected of having rubella infection in early pregnancy increasingly occupies the time of staff. In fact, virus immunology is fast occupying a separate role in the laboratory and however much it may be regretted it is no longer possible to train staff to be expert in both fields of immunology and virus isolation.

During the year a new methodology, developed in the laboratory, has been applied to the routine testing of sera for rubella antibody. The laboratory’s use of passive haemolysis is a first for Australia. The test was adopted as routine only after exhaustive trials in parallel with the standard haemagglutination-inhibition test. It has

proved more specific, reproducible and since the antibody is expressed in units it affords more precise comparisons between the initial and subsequent determinations of a patient's antibody state. A paper is being prepared for publication on the work.

Isolation of viruses from clinical materials ran at the rate of 14·4 per cent from 11 297 specimens received. This represents a considerable volume of work with incommensurate reward. Inevitably, many specimens represent sporadic infections of doubtful aetiology as well as those submitted beyond the optimum period in the diseases for virus recovery. Many also represent specimens for which a bacterial cause of infection was demonstrable.

The work in collaboration with the Special Treatment Clinic on virus and chlamydial agents in sexually transmitted diseases such as "non specific urethritis", continued through the year and a paper is being prepared for publication. In the meantime, some of the results obtained formed the basis of a paper read on behalf of the laboratory by Dr. Gollow at a meeting in Singapore of the South Asian branch of the International Union against Venereal Diseases and Treponematoses.

A study of rotavirus infection in Aborigines in Western Australia in conjunction with Dr. Roger D. Schnage of Department of Microbiology, University of Melbourne, was completed and a paper on this has been submitted to the Australian Medical Journal. Concurrently, an investigation in collaboration with Dr. Peter Menters into the incidence of rotavirus infection in children, admitted to the Princess Margaret Hospital, was completed and the results are the subject of an intended publication.

Professor A. Nahmias of Emory University, U.S.A., spent six months in Perth as visiting professor of microbiology at the University of Western Australia. A worker with an international reputation in the field of herpes viruses, Dr. Nahmias involved many clinicians and our virus laboratory in an ongoing investigation of viruses potentially important in the causes of congenital abnormalities. The programme coded as "TORCH" is designed to determine, in the immunological and virus isolation spheres, what viruses can be incriminated. The study is an ambitious one but already some interesting findings are evolving, particularly in papovaviruses.

The viral agents found responsible for disease in Western Australia are illustrated in the accompanying histograms. Influenza A Victoria was responsible for a sharp epidemic in the June—July period. Only a single isolation of influenza B was made. Parainfluenza type 3 was responsible for a major epidemic in children in the autumn, while into winter, respiratory syncytial virus infection affected young children and infants.

The severe epidemic of mumps in 1975 continued into January of 1976.

Adenovirus was prevalent in the latter months of the year of which type 7 was the most frequently isolated.

Rotavirus infection was significantly most prevalent in May, June and July, with a marked peak in June.

Of great significance was the marked increase of herpesvirus infections with types 1 and 2. The reason for this steep increase over the previous year is not readily explainable, but from reports in other countries the increase would appear to be world-wide.

CLINICAL BIOCHEMISTRY (See Table III)

The Division of Clinical Biochemistry is incorporated in the Perth Medical Centre Clinical Biochemistry Service. This is a combined laboratory serving Sir Charles Gairdner Hospital, the State Health Laboratory Service and the University of Western Australia. Staff members are employed by one or other of the parent institutions and form a combined staff under the direction of the Head of the Service who is responsible to the three institutions through the Laboratory Users' Liaison Committee. The combined service began in July, 1975.

During 1976, major staffing events were the appointment of Dr. Peter Garcia-Webb as Senior Lecturer and the absence of Professor Curnow on study leave. Dr. Damian Hope, Registrar, spent the year in the department and was successful in the Royal College of Pathologists examinations.

On October 25, 1976, the University Senate created a University Department of Clinical Biochemistry, separating it from the Department of Pathology.

Work Load

There was an increase of 29 per cent in specimens examined, and those from State Health Laboratory sources showed a marked increase—57 per cent.

Teaching

The first year of a new M.Sc. by course work in Clinical Biochemistry, the first in Australia, attracted a full quota of eight students, four of whom spent most of their time in the laboratory under supervision of staff of the Service.

Services Developed

Two new multichannel analysers, SMA 6 and SMA 6 plus, and a Beckman discrete sample analyser were brought into service during the year. The list of reference values was updated. Computerisation of the laboratory continues.

Quality Control

A full external quality control programme was run as in previous years using the Burroughs Wellcome quality assurance scheme. The number of country laboratories included in the programme increased this year from 16 to 21; the new participants being Osborne Park, Swan Districts, The Mount, Bentley and Rockingham laboratories.

Research

Research activities included studies on the minor metabolites of cortisol in the newborn and on melatonin estimation. Collaborative work with the University Department of Medicine was started on trace elements in liver biopsy material and on serum iron, red cell porphyrin and serum ferritin. With the Endocrine Unit work on hydroxproline and bone minerals was continued. Improved methods for catecholamine estimation have been submitted for publication.

Conferences and Visits to Other Centres

Mr. Rossi was awarded a State travelling scholarship to attend the Brisbane meeting of the Australian Association of Clinical Biochemists where he presented a paper.

As Chairman of the A.A.C.B. (W.A. Branch), Dr. Dick organised the membership course of weekly evening seminars and lectures throughout the year and the education committees of the International Federation of Clinical Chemistry and the International Union of Pure and Applied Chemistry continue to be chaired by the Head of the Service.

Visitors

Distinguished visitors to the department were:—

Professor J. H. Wilkinson, London.

Professor C-B. Laurell, Sweden.

Professor M. Rubin, Washington.

Dr. H. Burger, Melbourne.

Dr. C. Eastman, Canberra.

Papers Published

SERUM PYRIDOXAL AND FOLATE CONCENTRATIONS IN DIABETICS.

R. E. Davis, J. S. Calder and D. H. Curnow.

Pathology, **8**, 151 (1976).

WHATEVER HAPPENED TO MOTHER GOOSE?

D. H. Curnow.

Aust. Family Physician, **5**, 8 (1976).

CLINICAL CHEMISTRY EDUCATION.

D. H. Curnow.

J. Chem. Ed. **53**, 779 (1976).

TOXICOLOGY SECTION

The number of specimens analysed by the section increased overall by 67·4 per cent as compared with 1975. The major part of the increase was in drug analyses for clinical cases. Whereas once it was overdose (accidental or potentially suicidal) that engaged the attention of clinicians, more recently various other aspects of drug therapy have become of increasing importance—whether people take drugs that they should, monitoring blood levels when this is important to ensure a therapeutic response or when potential liver or kidney damage may occur, and even controlling the whole regime of therapy by blood levels in certain urgent situations. A night service organised for various hospitals in the metropolitan area is now so much used that five calls in out-of-hours time are received weekly.

The number of drug screens requested has increased: each takes 3–4 hours to complete and some 200 drugs are routinely looked for. Such a service is given to the Alcohol and Drug Authority.

During the year a number of new methods were developed. These included assays for Paracetamol, Ospolot and Metronidazole. Eleven scientific papers were submitted for publication in 1976.

There is a need to develop a better advisory service. The present chemists are too busy with analytical methods, and their lack of formal training in pharmacology makes precise advice on drug regimes and meaning of analyses often incomplete.

Papers Submitted for Publication in 1976

1. EXTRACTION PROCEDURES FOR SOME COMMON DRUGS IN CLINICAL AND FORENSIC TOXICOLOGY.
Journal of Forensic Sciences.
2. INTERFERENCE IN DRUG SCREENING ASSAYS.
Clinical Chemistry.
3. INTERFERENCES IN DILANTIN ASSAYS.
Clinical Chemistry.
4. DETERMINATION OF MERCURY IN FISH USING A RAPID DIGESTION PROCEDURE AND FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY.
Journal of the Association of Official Analytical Chemists.
5. DETERMINATION OF PARACETAMOL IN HUMAN SERUM.
Clinica Chimica Acta.
6. GAS CHROMATOGRAPHIC DETERMINATION OF SULTHIAME IN HUMAN PLASMA.
Clinica Chimica Acta.
7. GAS CHROMATOGRAPHIC DETERMINATION OF VALPRORIC ACID IN HUMAN PLASMA.
Journal of Chromatography.
8. RAPID IDENTIFICATION OF DRUGS IN THE OVERDOSED PATIENT.
Clinical Toxicology.
9. A DIRECT EXTRACTION PROCEDURE FOR THE ANALYSIS OF NEUTRAL DRUGS IN TISSUE.
Clinical Toxicology.
10. THE USE OF BUFFERED CELITE COLUMNS IN DRUG EXTRACTION TECHNIQUES AND THEIR PROPOSED APPLICATION IN FORENSIC TOXICOLOGY.
Journal of Forensic Sciences.

11. A COMPARISON OF THE BORATE-CELITE COLUMN SCREENING TECHNIQUE WITH OTHER EXTRACTION METHODS IN FORENSIC TOXICOLOGY.

Journal of Forensic Sciences.

DEPARTMENT OF HAEMATOLOGY

The Department of Haematology is a combined service of the State Health Laboratory Services and Sir Charles Gairdner Hospital and is situated on the 1st Floor, 'A' Block, S.C.G.H. The In Patient Unit is in Ward C.19, S.C.G.H., and Out Patient Clinics are held in the new Diagnostic Unit, S.C.G.H. Despite the mixed staff situation, there has been remarkably little friction or trouble during the year.

Medical Staff

- J. L. Raven, M.R.C.P., M.R.C.P.E., F.R.C.P.A.—Head of Department.
- D. W. Kennett, M.B., B.S., F.R.C.P.A.—Haematologist.
- P. D. Meagher, M.B., B.S.—Haematology Registrar.
- D. Hope, M.B., B.S.—Haematology Registrar.

Work Load for 1976 (See Table V)

Work Load of Different Sections of Haematology Department

			Tests		Samples	Tests: Samples
			No.	%		
Routine Laboratory	....	....	90 370	52	45 424	1.99
Blood Bank	....	....	50 132	30	12 344	4.06
Coagulation	....	....	17 243	10	9 096	1.90
Special Investigations	....	....	15 578	8	1 449	10.75

The high ratio for tests: samples for the Special Investigation section is due both to the nature of work carried on in that section (investigation of haemolytic anaemias, haemoglobinopathies, etc.) and to the developmental nature of much of its work.

Laboratory Developments During 1976

The radioisotopic serum B12 assay developed in this department started to be used as the routine serum B12 assay in the State Health Laboratory Services Radioisotopes Unit.

All commercial radioisotopic methods of serum folate assay were evaluated and a change to radioisotopic serum folate assay will take place in early 1977 (at present the S.H.L.S. Radioisotopes Unit uses the microbiological L. casei method for its routine serum folate assays).

The Blood Bank carries out the bulk of paternity studies in Western Australia and the following tests have been brought into use in 1976:—

- Haptoglobin genotyping.
- Red Cell Acid Phosphatase grouping.
- PGM Typing.

Planned for 1977 are Gc groups and Adenylate Kinase grouping.

The department has a special interest in abnormal haemoglobins and through the State Health Laboratories attracts samples from as far as Darwin and Cocos Islands. During the year, globin chain synthesis studies using tritiated leucine were brought into routine use and in 1977 high voltage electrophoresis equipment will make possible globin chain peptide mapping and other studies.

1976 was an interesting year for the diagnosis of malaria. Eleven cases were diagnosed, including:—

P. vivax	....	....	....	9
P. vivax and malariae	....	....	....	1
P. falciparum	....	....	....	1

(15 cases were diagnosed in 1975).

Quality Control

All branch laboratories took part in the quality control programme organised successfully by the Combined Haematology Unit, and most Perth hospitals and private pathologists also asked to be included in the scheme, which remained very successful.

HISTOPATHOLOGY AND CYTOLOGY

This section has seen a major increase in work load since the introduction of Medibank. Surgical biopsies increased by 84 per cent and frozen sections by 134 per cent. While the average number of frozen sections is eight per week, the distances travelled and the time involved make the operation of this service wearying and sometimes frustrating. As a common time for commencement of an operation is 8.00 a.m., and the venue may be as distant as Kalamunda or Rockingham, the time spent by a pathologist and technologist in one such service may amount to 3–4 hours, and is never less than two hours.

Not only has the volume of work increased, but there has been some change in its nature. More work from recognised surgical specialists comes to the unit, for most operative procedures in metropolitan non-teaching hospitals are performed by specialists. The unit is undoubtedly easily the largest in Western Australia, and despite its size, has managed to function (just) with very minimal staff changes. The consultant pathology staff remained at three during the year, though Dr. Carroll, a final year registrar, successfully completed his special histopathology training and became a Fellow of the Royal College of Pathologists. Dr. A. Gaman passed his general examination in histopathology at the same College.

The technical and clerical staff worked consistently well, enabling reports to be sent out, in the vast majority of cases, on the same day that the specimens finished being processed—i.e. on the day following arrival in the section. Unfortunately, the postal services are such that despite our best efforts, a delay of several days often ensues before the report reaches the practitioner concerned, and this delay (obviated by private pathologists who have more developed courier services) is laid at the door of the laboratory.

CYTOLOGY

Again, an increase of 34 per cent in the work of this subsection has been attained with only small increases in staff. There remains a definite deficiency in trained screeners; this subject is not one taught to technologists, and the only course extant is still the one at Mount Lawley. With the increase in records which must be continuously searched as follow-up material arrives, and a dearth of screeners, the only hopes to save staff are some form of automation of screening and computerisation of records. Both avenues are being investigated. Staining of cytology slides is now automated.

Staff Changes

Dr. K. Williams resigned 31/12/76 and subsequently took a sessional post as Histopathologist/Cytologist on 1/1/77.

Dr. J. Carroll, Registrar, resigned 31/12/76 on successful completion of his specialist course in histopathology. He subsequently joined the department as a Pathologist on 1/1/77.

FORENSIC SERVICES

1. Forensic Pathology

The number of coronial autopsies was much the same as in 1975, and there was no diminution in the standard of service. Visits to remoter areas was sometimes difficult in times when air services were interrupted.

The quality of assistance for pathologists and general practitioners in country mortuaries often was not high, and in an attempt to improve this state of affairs, discussions were held under the aegis of the Commissioner of Public Health and Medical Services by representatives of the Royal College of Pathologists of Australia (W.A. Branch), the Education Department and the Public Service Board with a view to introducing a certificate course for mortuary assistants. Course details (three years

part-time) were worked out, and the first course is intended to commence early in 1977. This is the first such course in Australia. At the same time a review of mortuary equipment was instituted.

There were no major staff changes in the year.

2. Forensic Biology

There was an increase of 40 per cent in the number of items received for examination in 1976, over the 1975 figures. The items were predominantly from the Criminal Investigation Branch of the Police Department and from various medical practitioners. The staff of this section also increased, with the addition of one senior technologist. The technical work, preparation of reports and attendances in court, now are shared by the two qualified staff members.

New techniques introduced during the year have extended the range of tests on bloodstains so that as well as ABO groups and P.G.M. types, this section now identifies haptoglobin, Gm and Inv types. Also, the techniques used to identify the ABO groups in various stains, have been modified to improve sensitivity and ease of performance. This includes the introduction of the absorption—inhibition technique used for body fluids other than blood. Using this technique the ABO group has been successfully identified in the saliva stains on cigarette butts, on the sealed flap of envelopes, and on gags and masks.

Another trend has been to improve the identification of body fluids. Tests have been introduced to identify saliva stains, faecal stains, and vaginal stains. Equipment for electrofocusing techniques has been ordered, so that the differentiation of seminal and vaginal phosphatases will be possible.

The introduction of these additional methods of identification has been encouraged by the C.I.B. and Crown Law, and a close liaison is maintained with both departments. To take full advantage of the wider range of tests, a more positive form of reporting our results has been adopted.

During the year both technologists have been called out during and after working hours on a number of occasions, either to attend the scene of an offence or to collect medical samples from various individuals for comparison purposes. This area of our services has been actively encouraged and it is hoped that in the future more use will be made of our expertise in the collection of samples at the scene of an offence.

SEROLOGY SECTION (See Table VII)

Work Load

There was an increase of 16 per cent in specimens received during the year.

A total of 2 700 specimens were received for treponemal serology from 22 surveys covering most areas of the State. Of these specimens, 352 or 13 per cent of the total, gave one or more reactive results. It must be emphasised that not all of these cases would be active Syphilis; some could be biological false positive reactions from conditions such as leprosy, and others could be reactions persisting from past and/or treated infections including yaws. Because of increased numbers of requests for treponemal serology, it was necessary to alter the number of batches from twice weekly to daily. This also led to improved speed of reporting.

Complement fixation tests for Rickettsia antibodies were discontinued early in 1976 due to the unavailability of antigen. Agglutination tests using Proteus OX19, Proteus OX2 and Proteus OXK antigens can still be performed in suspected cases of typhus fever.

Fluorescent antibody tests for Toxoplasma IgG and IgM were commenced in 1976. Some problems with commercial antisera have been experienced but the test is now available as a diagnostic service.

As in past years, we have continued to evaluate new brands of testing kits and new testing systems as they appear on the market. Several methods of brands of kits have been changed as a result of these evaluations.

The serum agglutination tests (Widal, Weil Felix and Brucella agglutinations) are now being performed using a stained antigen suspension. This change has resulted in a more readily visible agglutinated deposit due to the stain present in the antigen.

A new pregnancy slide test kit is also in use as a result of these investigations. The method now in use gives agglutination when the test is positive, and no agglutination in a negative test. The previous method was based on a testing system which gave no agglutination in a positive case and agglutination in a negative case. This occasionally led to errors in inexperienced hands.

As indicated above, we have had problems with commercially prepared anti-human IgM antiserum in the Toxoplasma fluorescent antibody tests. Following a comparison of several brands, a suitable product has now been selected.

An internal programme involving a number of metropolitan and country branch laboratories, and several hundred specimens, was carried out in order to establish the suitability, or otherwise, of slide tests for rheumatoid arthritis and pregnancy testing in branch laboratories. As the results were equal to expectations, these two kits are now available in branch laboratories.

Staff and Accommodation

There were no changes of note during the year.

CYTOGENETICS SECTION (See Table VII)

Work Load

1 125 specimens were referred for cytogenetic analysis between the 1st January and 31st December, 1976. 233 patients were referred for prenatal cytogenetic analysis and these cases together with the parents screened prior to amniocentesis, constituted 60 per cent of all work done by the unit. The rate of referral for prenatal cytogenetic analysis has increased markedly over the past year and this increase is expected to continue.

The Giemsa banding technique for differential staining of chromosomes has been applied on a number of patients. It is intended to extend the use of this technique to all patients with a clinical suspicion of chromosome abnormality and to all amniotic fluid cell cultures. Efforts are being made to improve the technique.

Education

The unit has continued its educational role with demonstrations and lectures to medical students, nurses, teachers and high school students.

Publications

Two papers were published in 1976:—

1. MATERNAL CELL CONTAMINATION A PROBLEM IN PRENATAL DIAGNOSIS.
Human Genetics, Volume 34, 1976.
2. THE ORGANISATION OF DIAGNOSTIC AMNIOCENTESIS IN WESTERN AUSTRALIA.
Excerpta Medica, Fifth International Congress of Human Genetics, International Congress Series No. 397.

Conferences

Dr. Mulcahy and Miss Jenkyn attended the Centenary Scientific Symposium on Genetically Inherited Disease conducted by the Adelaide Children's Hospital in August 1976. Immediately prior to that symposium, one member of the staff attended the Eighth Human Cytogenetics Conference at the same hospital. Dr. Mulcahy attended the Fifth International Congress on Human Genetics held in Mexico City in October 1976. Whilst there she delivered the second paper mentioned above and was an invited speaker at a round table conference on the use of the John Hopkins Repository of Chromosomal Abnormalities and Variants.

Surveys

In November 1976, a cytogenetic survey of all mentally retarded male patients resident in Swanbourne Hospital was commenced. Because of the diagnostic work load imposed on the laboratory, this survey will take some time.

Staff

The staff now consists of one medical officer, a senior technologist, four technologists and one laboratory assistant. A typist, clerk and two laboratory attendants are shared with the Serology Laboratory.

House Dust Mites

In addition to cytogenetics, this section has been involved with house dust mite (*Dermatophagoides pteronyssinus*) work in association with the Forensic Section. A member of the staff was sent to the Waite Institute, Adelaide, in January 1975 to learn the technique of collection and identification of these mites so that counts could be made on material associated with the Sudden Infant Death syndrome. To date 50 cases have been investigated, 35 of them in 1976.

RADIOISOTOPES UNIT

As against 1975, 1976 saw a slight decrease in the work load due to smaller numbers of surveys. The most significant increases were in vitamin assays and thyroid function requests. Although only an increase of 26 per cent overall, the requests for thyroid stimulating hormone rose by 52 per cent and the requests for direct total tri-iodothyronine by 47 per cent. Some requests for these estimates are made on an insecure scientific appreciation of their usefulness.

During 1976, as in 1975, the Radioisotopes Unit did not have any staff increase. Computer facilities will undoubtedly go a long way to save manpower.

Two scientific papers, submitted for publication in 1975, were published in 1976.

These were:—

1. SERUM INSULIN LEVELS FOLLOWING SUBCUTANEOUS ADMINISTRATION OF RAPITARD INSULIN.
A. M. J.
2. INSULIN LOSS IN PARENTAL NUTRITION SYSTEMS.
J. Anaeth & Intensive Care.

These papers were done in conjunction with the Endocrinology Department (Sir Charles Gairdner Hospital) and the Pharmacology Department (University).

New Work

Quicker methods for assaying serum thyroxine and serum estriol, and methods for assaying prolactin and gentamicin are being investigated. Radioimmuno assay kits for THC and LSD have been ordered.

DIVISION OF CLINICAL PHOTOGRAPHY

Whilst continuing to provide the medical photographic service to hospitals other than the Royal Perth Hospital and to the various State Health and medical departments, 15 000 transparencies, 2 200 prints, 230 separate pieces of art work, apart from cine, and video taping, were produced. Mr. P. Wilson attended the Medical Photographers conference at the Flinders University in Adelaide, and Mr. R. Plummer whilst on long service leave in the U.K., visited a number of hospitals in the London area.

Work in the Sir Charles Gairdner Hospital's Eye Clinic increased in volume and 220 patients were given fluorescein retinal angiograms resulting in the production of 5 652 transparencies and 576 prints. The number of patients booked for angiography is restricted due to staff shortages, and there is a current waiting period of six weeks for patients.

Video taping is severely restricted due to insufficient equipment, studio and staff.

ANIMAL BREEDING AND ANIMAL HOLDING

Due to delays in the commencement of the State Animal Breeding Centre, it has been necessary to re-commission the small animal breeding unit at Shenton Park. Upgrading of facilities was completed in December, with breeding stock being introduced directly.

The increased demand for horse blood for culture media has necessitated an extra number of horses, bringing stock numbers up to twenty two. Bleeding is now carried out at four to five week intervals, and is resulting in a saving to the State of approximately \$50 000 per year.

TABLE IA
STATE HEALTH CENTRAL LABORATORIES (INCLUDING COMBINED UNITS)
SPECIMENS ANALYSED AND AUTOPSIES PERFORMED

	1976	1975	Increase
			%
Clinical Bacteriology	17 421	11 950	45·8
Virology	36 316	34 028	6·7
Mycology	23 220	21 427	8·3
Mycobacteria	9 376	10 878	—13·8
Venereal Disease	31 558	17 145	84·0
Enteric	24 507	18 137	35·0
Foods	3 696	3 483	6·0
Waters and Sewerage	18 793	14 202	32·3
Total Microbiology	164 887	131 250	25·6
Biochemistry	92 476	71 534	29·3
Toxicology	9 780	5 841	67·4
Radioisotopes	20 896	21 742	— 3·9
Haematology	68 313	61 696	10·7
Serology	63 673	54 990	15·8
Histopathology	18 339	9 932	84·6
Cytology	17 553	13 084	34·2
Autopsies	1 294	1 241	4·3
Total	457 211	371 310	23·1

TABLE IB
WORK DONE BY BRANCH LABORATORIES 1976

Branch Laboratory	1976	1975	1976 Increase
			%
Albany	9 982	8 457	18·5
Broome	3 359	3 121	7·6
Bunbury/Collie	16 359	15 471	5·7
Busselton/Margaret River	8 036	6 200	29·6
Carnarvon	9 329	8 897	4·9
Dampier	10 305	6 796	51·6
Derby	10 460	10 165	2·9
Esperance	5 481	4 976	10·1
Geraldton	20 015	14 199	41·0
Katanning	1 279	....	Opened July 1976
Kununurra	239	....	Opened March 1976
Manjimup	8 555	7 113	20·3
Merredin	7 842	5 616	39·6
Narrogin	11 447	11 313	1·2
Newman	89	....	Opened Sept. 1976
Northam	8 993	8 374	7·4
Pinjarra	8 770	6 017	45·8
Rockingham	3 321	....	Opened June 1976
Port Hedland	17 071	13 246	28·9
Tom Price	62	....	Opened Nov. 1976
Wyndham	7 847	5 322	47·4
Armadale/Kelmscott	1 138	1 100	Opened Aug. 1975
Bentley	9 202	2 140	Opened Aug. 1975
Mount	4 030	1 220	Opened Aug. 1975
Osborne Park	10 346	2 554	Opened Aug. 1975
Swan Districts/Kalamunda	12 332	4 087	Opened Aug. 1975
Total	205 889	146 384	40·6

TABLE IIA
CLINICAL BACTERIOLOGY SPECIMENS 1976

	Country and Metropolitan Medical Practitioners	Mental Health Services	Department of Corrections	Family Planning Association	Aboriginal Medical Service	Womens Health and Community Centre	Strains for Identification	Others	Total
No. of Specimens	6 290	995	829	5 164	600	376	333	2 834	17 421

TABLE IIB
V.D. CLINIC

	Total	No. Positive	Positive
Specimens for Gonorrhoea	31 200	2 027	% 6·5
Specimens for Syphilis (Dark Ground Illumination)	358	26	7·3

TABLE IIC
WATERS AND SEWERAGE—SPECIMENS 1976

Specimens	State	Common- wealth	Local Health Authority	M.W.S.S.D.	Other	Total
Drinking Water	1 159	47	1 320	8 995	163	11 684
Natural Waters	2 161	....	905	2 775	9	5 850
Swimming Pools	167	....	186	....	8	361
Sewage/Effluent	66	22	134	630	46	898
Total	3 553	69	2 545	12 400	226	18 793

TABLE IID
FOODS—SPECIMENS 1976

	State	Common- wealth	Local Health Authority	Others	Total	No. Positive for Pathogens	Positive
Specimens	2 109	957	588	42	3 696	280	7·6

TABLE IIE
ENTERIC DISEASE LABORATORY
PUBLIC HEALTH BACTERIOLOGY—SPECIMENS EXAMINED FOR PATHOGENS 1976

Specimens	State	Common- wealth	Local Health Authority	M.W.S.S.D.	Other	Total	No. Positive for Pathogens	Positive
Human	10 989	356	279	....	1 410	13 034	1 600	% 12·3
Animal	4 005	11	34	....	....	4 050	991	24·5
Water/Effluent	2 333	76	1 654	1 811	3	5 877	1 218	20·6
Cultures Referred	865	109	....	....	52	1 026	784	76·4
Phage Typing	520	....	....	....	....	520	520	100
Total	18 712	552	1 967	1 811	1 465	24 507	5 113	20·9

TABLE IIF
PARASITOLOGY—SPECIMENS 1976

No. of Specimens	No. Positive	Positive
11 653	2 328	% 20

TABLE IIG
TUBERCULOSIS—SPECIMENS 1976

	Perth Medical Clinic	Chest Clinic	Repatriation and Kalgoorlie	Others	Total	Total Positive	Positive
						M. Tuberculosis 303 Other Mycobacteria 586	%
No. of Specimens	3 015	1 425	1 337	3 599	9 376	Total 889	9·5

TABLE IIH
MYCOLOGY SPECIMENS 1976

Total Specimens	Total Positive	Positive
23 220	6 051	% 26
Skin Scrapings	Scrapings Referred	Collected by Staff
6 569	2 263	4 306

TABLE III I
VIRUS LABORATORY—SPECIMENS 1976

Specimens for Isolation	Positive Isolations	Specimens for Rubella	Specimens General Serology	Positive Serology	Total
11 297	1 627	16 749	5 788	691	36 152

TABLE IIII
CLINICAL BIOCHEMISTRY—SPECIMENS EXAMINED 1976

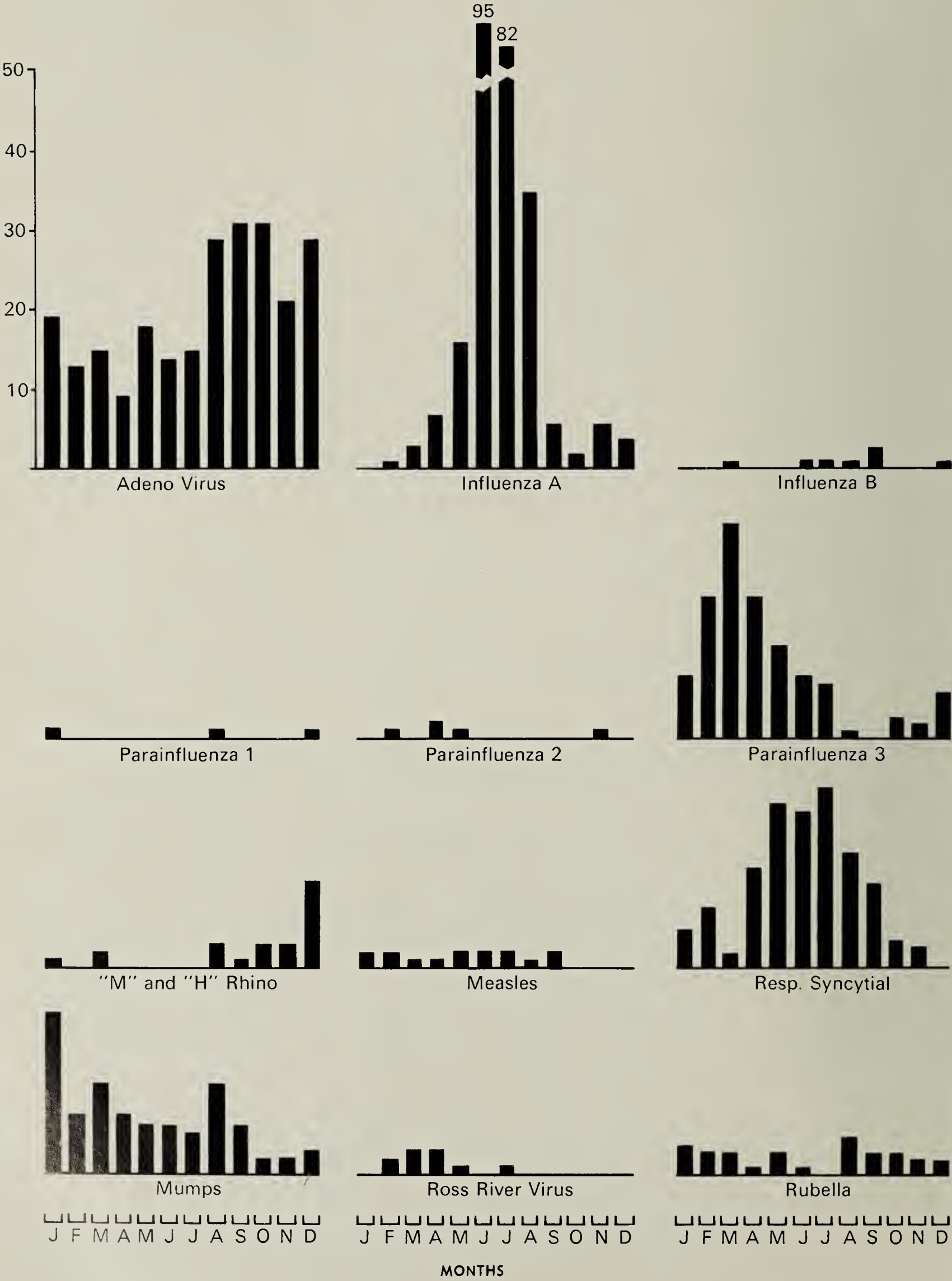
	1976	1975	1976 Increase
Sir Charles Gairdner Hospital	57 984	46 242	% 25·4
State Health Laboratory Services	31 163	19 855	57
Commonwealth Instrumentalities	814	828	— 1·7
Surveys etc.	2 515	4 609	—45·4
Total	92 476	71 534	29·3

TABLE IV
TOXICOLOGY SECTION—SPECIMENS 1976

	1976	1975	1976 Increase
CLINICAL—			%
Drugs	7 723	4 331	78·3
Alcohols	127	95	33·7
Pesticides	385	171	125
Miscellaneous	322	19	1 594·7
FORENSIC—			
Drugs	488	321	52
Alcohols	735	525	40
PUBLIC HEALTH—			
Mercury ....	....	337	*
Miscellaneous ....	....	42	*
Waters ....	....	....	*
Total	9 780	5 841	67·4

* These tests no longer done.

SEASONAL DISTRIBUTION OF VIRUS AND VIRUS-LIKE INFECTIONS
 DIAGNOSED IN VIRUS LABORATORY, 1976 - (1)



SEASONAL DISTRIBUTION OF VIRUS AND VIRUS-LIKE INFECTIONS
DIAGNOSED IN VIRUS LABORATORY, 1976 - (2)

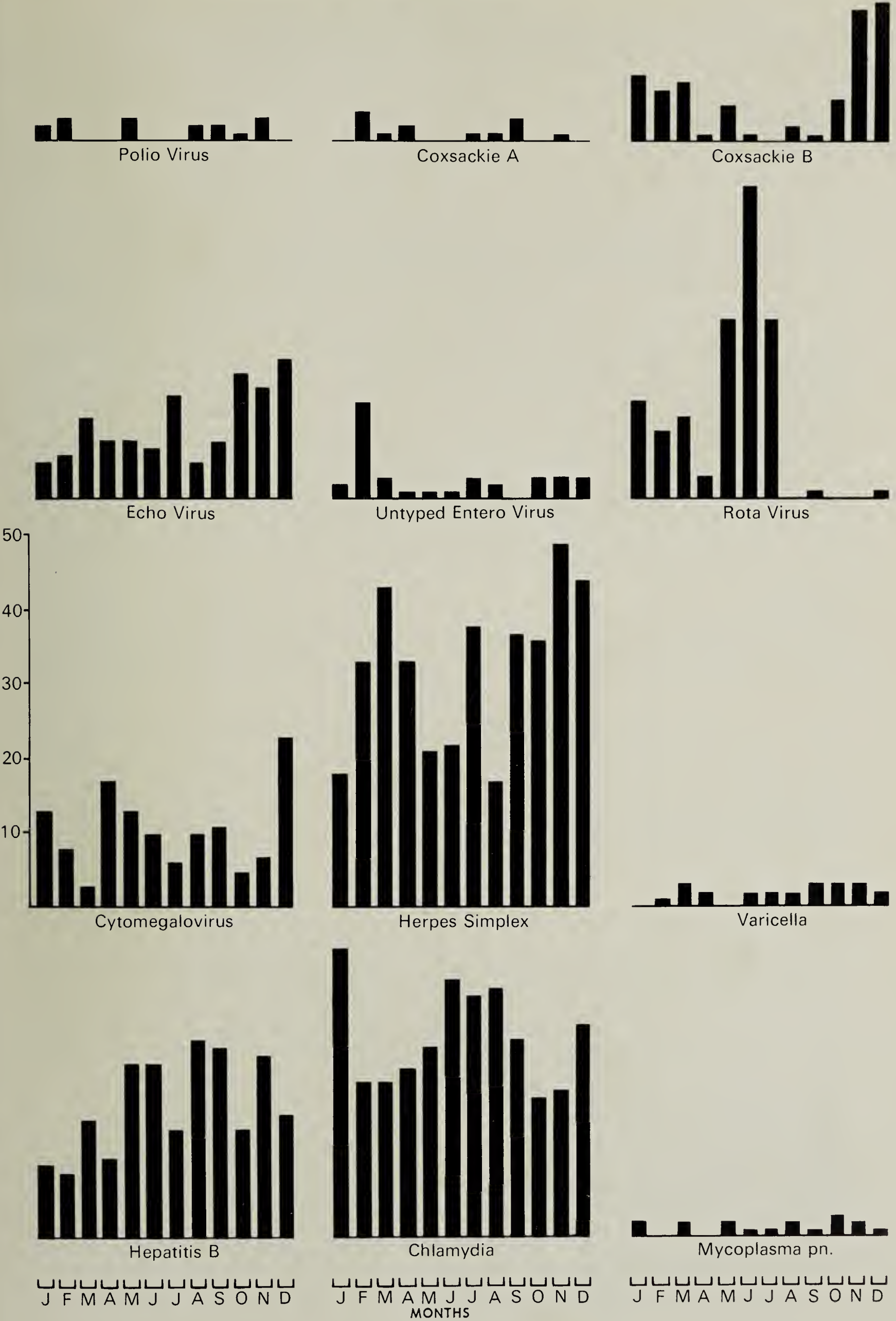


TABLE V
HAEMATOLOGY STATISTICS—SAMPLES ANALYSED 1976

	1976	1975	1976 Increase
			%
Sir Charles Gairdner Hospital	46 632	38 558	20·9
State Health Laboratory Services	15 653	14 829	5·5
Commonwealth etc. and University	1 221	1 119	9·1
State Surveys	4 807	7 190	— 33·1
Total	68 313	61 696	10·7

TABLE VIA
HISTOPATHOLOGY AND MORBID ANATOMY—WORK DONE 1976

	1976 Total	1975 Total	1976 Increase
			%
Autopsies—Forensic	1 294	1 241	4·3
Surgical Biopsies	18 339	9 932	84·6
Blocks Cut—Autopsies	18 228	24 464	— 25·5
Blocks Cut—Biopsies	37 479	21 897	71·2
Frozen Sections—Biopsies	382	163	134
Immunological Sections	3 052	2 363	29

TABLE VIB
CYTOLOGY—SPECIMENS ANALYSED 1976

	1976	1975	1976 Increase
			%
Lung Cases	781	528	47·9
Cervical Cases	16 536	12 448	32·8
Miscellaneous	236	108	118·5
Total Cases	17 553	13 084	34·2

TABLE VII
SEROLOGY DEPARTMENT—SPECIMENS RECEIVED 1976

	1976	1975	1976 Increase
			%
Treponemal Serology	40 029	40 126	— 0·2
Bacterial Serology	7 628	4 902	55·6
Viral, Rickettsial, Helminthic and Protozoal Serology	6 721	5 708	17·7
Hormones—Miscellaneous	828	788	5·1
Medico-legal ....	....	1 860	....
Chromosome Studies	1 135	786	44·4
Tissue Antibodies	907	503	80·3
Others	6 425	317	1 926·8
Total	63 673	54 990	15·8

NOTE: 34 Cot Deaths (House Dust Mite Work) not included in the above figures.

TABLE VIII
RADIOISOTYPES SECTION—SPECIMENS RECEIVED 1976

	1976	1975	1976 Increase
			%
Thyroid Function	10 098	7 973	26
Vitamin B12 Folic Acid	5 538	3 404	63
Insulins	177	2 748	**
Digoxins	1 052	1 789	— 41·2
Hormones—Miscellaneous ....	....	1 152	*
Estriols and Human Chorionic Sommatomammotrophin	967	1 262	— 23·4
Anti DNA ....	....	292	*
Australian Antigens and Antibodies	3 064	3 122	— 1·9
Total	20 896	21 742	— 3·9

* Regrouped with thyroid function.
** The 1975 insulin figures include 2 500 survey insulins.

Tuberculosis Control Branch

R. M. Porter, M.B.B.S., F.C.C.P.

Director

Notifications

The diagnosis of mycobacterial disease in Western Australia was notified during 1976 in 110 persons (not including leprosy). This was a rate of 9·6 per 100 000. The rate for males was 11·2 per 100 000 and for females 8·0. New cases were 8·7 per 100 000 with males 9·8 and females 7·6 per 100 000.

There was a fall in the total number of cases in 1976 and this fall was out of proportion to that of previous years. The number of migrant cases was also fewer than in 1975. This may have been associated with the fact that yearly migrant intake into Western Australia in 1975 and 1976 was approximately half that of the years between 1970 and 1974 inclusive.

The classification of pulmonary tuberculosis showing stage of disease indicates that 19·3 per cent were considered to be advanced. The figures are not large but this is the highest proportion of advanced cases since 1958. This may indicate that more cases are not being diagnosed until a later stage of their natural history or that some now developing are not yet diagnosed. Both these related possibilities could be associated with the cessation of the compulsory community surveys after 1972. A continuing close observation of these figures in later years is important.

Non-Pulmonary Tuberculosis

There was a fall in the number of males diagnosed with non-pulmonary disease, the rates being 2·2 per 100 000 in males and 2·5 per 100 000 in females with an overall rate of 2·4 per 100 000.

Source of Cases

In conformity with the figures in recent years an increasing proportion of the cases were notified by private practitioners. This year 32 per cent of the pulmonary cases originated from action taken by private practitioners. The Chest Clinics were the original source in 27 per cent, 17 per cent were detected by Chest Hospitals and the Repatriation Hospital. 1 per cent were notified by death certificate.

Persons born outside Australia

Although the number of persons notified for the first time with tuberculosis who were born outside Australia were fewer than in 1975, 59 compared with 70, because of the fall in the total number, this was a higher proportion, 59 per cent as compared with 52 per cent in 1975. These persons originated from a large number of countries but 24 came from the United Kingdom compared with 19 in 1975. Of these 59 cases 9 were in Australia for less than one year before notification, 18 from 1 to 5 years, and 32 for over 5 years. The 9 notified in the first year were detected as follows:

Two were seamen referred by shipping company doctors, and two came to Australia after being treated having made an undertaking to remain under supervision. Another after signing an undertaking was admitted by agreement with the State authorities while on treatment. One man treated for suspect tuberculosis in 1970 whose premigration film was considered satisfactory, developed symptoms after this x-ray was taken and had active tuberculosis when routinely x-rayed after arrival. A male visitor to Australia applied for permanent residence and a routine film showed extensive pulmonary disease. A female visitor had been unwell for several months prior to coming to Australia and was referred to the Chest Clinic with active tuberculosis a few weeks after arrival. The ninth case developed haemoptysis soon after a caesarean section and pulmonary tuberculosis was diagnosed.

Reactivations

The 4 reactivations were the lowest number yet recorded. Of these 3 had no previous chemotherapy, and 1 had poor chemotherapy.

Atypical Disease

There were 15 new cases of disease due to atypical mycobacteria. The organisms were classified as follows:

ATYPICAL DISEASE											
Serotype Earlier Designation						New Designation	Number of Patients				
							Pulmonary	Skin	Elbow	Gland	Total
Howell	....	....	....	....	....	12	1	....	....	....	1
Boone....	....	....	....	....	....	14	1	....	....	1	2
10409 ....	....	....	....	....	....	22	3	....	....	1	4
Lunning	....	....	....	....	....	42	1	....	....	....	1
Marinum	....	....	....	....	....	....	....	2	1	....	3
Darden	....	....	....	....	....	19	1	....	....	....	1
VII ....	....	....	....	....	....	7	1	....	....	....	1
Non Typable....	....	....	....	....	....	....	2	....	....	....	2
							10	2	1	2	15

Prevention

The expected continuation of migration to Western Australia and the increasing tourist activity to South East Asian Countries indicate the need to maintain the community B.C.G. programme. This is carried out in year nine secondary students. 2.47 per cent were tuberculin positive and 16 284 B.C.G. vaccinations were given.

DRUG RESISTANCE

There were 13 persons who produced organisms resistant to anti-tuberculosis drugs, 11 with no history of previous treatment. Of those with no history of treatment 5 were resistant to 1 drug, 5 to two drugs and 1 to three drugs. One of the previously treated cases when he became active again was resistant to three drugs and on retreatment developed resistance to Rifampicin and Ethambutol. The second treatment case was resistant to P.A.S. and Isoniazid but had no history of previous drugs.

SPECIAL SURVEYS

Survey activity was continued in men 45 years old and over. 14 344 were x-rayed and three cases of tuberculosis were notified as a result (0.2/1 000). Bronchial carcinoma was diagnosed in 18 cases (1.3 per 1 000).

OTHER ACTIVITIES

Mines Medical Section

The Chest & Tuberculosis Services Branch is responsible for registration and re-registration of miners under the Mines Regulations Act. It is also responsible for the regular clinical assessment of miners who have been in the industry for several years. The Pneumoconiosis Medical Board acting under the Workers' Compensation Act is organised at the Branch with the Mines Medical Officer as Chairman and other Physicians on the staff as regular members. Miners who work in A and B class mines are x-rayed and medically assessed at two yearly intervals. Some of these examinations are carried out at the Perth or Kalgoorlie Chest Clinics but for those in other country areas a mobile unit makes periodical visits. Mines Department officers assist in the organisation of these examination programmes.

The numbers of miners examined during 1976 was as follows:

New Applicants	....	....	5 715
Renewals	....	....	6 239
			<hr/> 11 954 <hr/>

Occupational Health

The Occupational Health Branch, Public Health Department carries out surveys of various industrial establishments including mines and the Chest and Tuberculosis Services Branch is responsible for all x-ray surveys in these establishments.

Respiratory Disease Project

With the assistance of funds from the Community Health Programme a preventive approach to chest disease is being undertaken. Due to problems of space this has been delayed but a number of chest clinic patients are being given better quality care and the necessary skills developed.

As part of this project physicians of the chest clinic staff are working in sessions at public hospitals.

ACKNOWLEDGEMENTS

The State Health Laboratory service continues to provide an expert and reliable service. The Community Health Service particularly in country areas assists in public health activities related to tuberculosis.

TABLE 1
NOTIFICATIONS, PERSONS ON REGISTER AND DEATHS—TUBERCULOSIS, W.A., 1950-76

Year	Mean Popu- lation 1 000s	Notifications (includes Transfers-in)				No. on Register (Pulm.) at 31st Dec.	No. on Register per 100 000 (Pulm.)	Number Receiv- ing T.B. Allow- ance at 31st Dec.	Deaths			Death Rate per 100 000	
		Pulm. (incl. Pleural effus.)	Non- Pulm.	Total	Pulm. per 100 000				Pulm.	Non- Pulm.	Total	Pulm.	All Forms
1950	558	586	18	604	104.8	2 100	376	515	125	3	128	22.4	22.9
1951	580	467	37	504	80.4	2 402	413	474	76	6	82	13.1	14.1
1952	601	508	49	557	84.5	2 574	428	396	75	7	82	12.5	13.6
1953	621	378	34	412	60.6	2 762	445	361	43	3	46	6.9	7.4
1954	640	348	34	382	54.3	2 769	432	326	57	4	61	8.9	9.5
1955	659	413	39	452	62.7	2 965	450	330	31	2	33	4.7	5.0
1956	677	424	44	468	62.6	2 900	428	264	43	3	46	6.3	6.8
1957	692	332	32	364	47.9	2 786	403	198	36	1	37	5.2	5.3
1958	706	355	24	379	50.3	2 726	386	213	22	4	26	3.1	3.4
1959	726	320	34	354	44.1	2 684	369	182	24	....	24	3.3	3.3
1960	731	296	34	330	40.5	2 388	327	148	29	1	30	4.0	4.1
1961	737	209	41	250	28.4	1 349	183	89	18	1	19	2.4	2.6
1962	755	243	25	268	32.2	1 333	177	90	24	4	28	3.2	3.7
1963	773	216	28	244	27.9	1 218	158	92	13	....	13	1.7	1.7
1964	790	176	32	208	22.3	1 221	154	88	20	....	20	2.5	2.5
1965	806	153	25	178	19.0	919	114	65	12	....	12	1.5	1.5
1966	836	134	36	170	16.0	840	100	64	16	....	16	1.9	1.9
1967	877	137	34	171	15.6	814	93	54	9	....	9	1.0	1.0
1968	910	145	37	182	15.9	680	75	44	8	1	9	0.9	1.0
1969	947	133	27	160	14.0	659	70	43	8	....	8	0.8	0.8
1970	983	113	35	148	11.5	653	67	32	10	....	10	1.0	1.0
1971	1 029	113	30	143	11.0	625	61	27	17	2	19	1.6	1.8
1972	1 053	125	30	155	11.9	569	54	40	8	....	8	0.8	0.8
1973	1 068	110	36	146	10.3	522	49	15	11	....	11	1.0	1.0
1974	1 090	104	36	140	9.5	480	44	17	8	1	9	0.7	0.8
1975	1 127	102	36	138	9.1	460	41	29	10	2	12	0.9	1.1
1976	1 145	83	27	110	7.3	437	38	13	4	....	4	0.4	0.4

TABLE 2
ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*
W.A., 1952-76

Year			Parenchymal Disease						Pleural Effusion		Total
			Minimal		Moderately Advanced		Advanced				
				%		%		%		%	
1952	....	....	122	24.0	275	54.1	101	19.9	10	2.0	508
1953	....	....	98	25.9	210	55.5	65	17.2	5	1.4	378
1954	....	....	96	27.6	178	51.1	74	21.3	....	....	348
1955	....	....	111	26.9	225	54.5	64	15.5	13	3.1	413
1956	....	....	127	38.0	217	51.1	72	17.0	8	1.9	424
1957	....	....	102	30.7	163	49.1	61	18.4	6	1.8	332
1958	....	....	91	25.6	187	52.7	72	20.3	5	1.4	355
1959	....	....	103	32.2	151	47.2	55	17.2	11	3.4	320
1960	....	....	89	30.1	144	48.6	49	16.6	14	4.7	296
1961	....	....	90	43.1	73	34.9	34	16.3	12	5.7	209
1962	....	....	117	48.1	84	34.6	36	14.8	6	2.5	243
1963	....	....	99	45.8	89	41.2	26	12.0	2	1.0	216
1964	....	....	71	40.3	81	46.0	23	13.1	1	0.6	176
1965	....	....	75	49.0	60	39.2	17	11.1	1	0.7	153
1966	....	....	59	44.0	54	40.3	18	13.4	3	2.2	134
1967	....	....	56	40.9	59	43.1	20	14.6	2	1.4	137
1968	....	....	71	48.9	59	40.7	11	7.6	4	2.8	145
1969	....	....	57	42.9	62	46.6	13	9.8	1	0.7	133
1970	....	....	51	45.1	47	41.6	10	8.9	5	4.4	113
1971	....	....	42	37.2	52	46.0	17	15.0	2	1.8	113
1972	....	....	51	40.8	50	40.0	20	16.0	4	3.2	125
1973	....	....	45	40.9	46	41.8	14	12.7	5	4.6	110
1974	....	....	36	34.6	48	46.2	13	12.5	7	6.7	104
1975	....	....	43	42.2	43	42.2	15	14.7	1	0.9	102
1976	....	....	33	39.8	32	38.5	16	19.3	2	2.4	83

* Classified according to Diagnostic Standards N.T.A.

TABLE 3
AGE AND SEX SPECIFIC TUBERCULOSIS NOTIFICATIONS BY FORM AND STAGE OF DISEASE,
W.A., 1976

Age Group	Males					Females					Persons					Total
	Pulmonary			Non Pulm.	Pleur. Effus.	Pulmonary			Non Pulm.	Pleur. Effus.	Pulmonary			Non Pulm.	Pleur. Effus.	
	Min.	Mod. Adv.	Adv.			Min.	Mod. Adv.	Adv.			Min.	Mod. Adv.	Adv.			
0-4	....	....	....	3	....	....	....	....	2	....	....	....	....	5	....	5
5-9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
10-14	....	....	....	....	....	2	....	....	....	....	2	....	....	....	....	2
15-19	1	....	....	1	....	....	....	....	....	....	1	....	....	1	....	2
20-24	....	1	....	1	....	1	....	1	1	....	1	1	1	2	....	5
25-29	3	1	1	2	....	4	1	....	1	....	7	2	1	3	....	13
30-34	....	2	1	1	1	2	2	1	1	....	2	4	2	2	1	11
35-39	....	1	....	....	....	1	1	....	3	....	1	2	....	3	....	6
40-44	2	5	2	1	....	....	....	....	3	....	2	5	2	4	....	13
45-49	2	4	2	....	....	....	1	....	....	....	2	5	2	....	....	9
50-54	1	4	3	3	....	1	2	....	....	....	2	6	3	3	....	14
55-59	2	1	1	....	1	....	....	....	1	....	2	1	1	1	1	6
60-64	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	1
65-69	2	....	1	....	....	2	2	....	....	....	4	2	1	....	....	7
70-74	2	1	2	....	....	....	....	....	....	....	2	1	2	....	....	5
75 and over	2	....	....	1	....	3	3	1	1	....	5	3	1	2	....	11
N/S	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	17	20	13	13	2	16	12	3	14	....	33	32	16	27	2	110

TABLE 4
TUBERCULOSIS BY SITE AND TYPE OF DISEASE (EXCLUDES TRANSFERS-IN), W.A., 1976

Pulmonary				Extrapulmonary			
Diagnosis	No.	% of		Diagnosis	No.	% of	
		Pulmonary Cases	All Cases			Extra-pulmonary Cases	All Cases
Primary .....	....	....	....	Genito-urinary	8	29.6	7.7
Pleural effusion	2	2.6	1.22	Lymph glands	9	33.3	8.6
Post-Primary—				Bone and Joint	3	11.1	2.9
1. Minimal	32	41.6	30.8	Meninges	3	11.1	2.9
2. Mod. Advanced	29	37.6	27.9	Skin	4	14.8	3.8
3. Advanced	14	18.2	13.5				
Total	77	100	74.0	Total	27	100	26.0

TABLE 5
T.B. REACTIVATIONS, W.A., 1964-76

Previous Treatment	Number of Reactivations													Total
	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	
(1) No chemotherapy	8	6	5	4	4	7	2	6	4	3	3	4	3	59
(2) Inadequate chemotherapy—														
Without Surgery	13	5	13	5	4	11	6	5	3	4	3	7	1	80
With Surgery	5	2	1	4	1	....	....	....	....	....	1	1	....	15
(3) Apparently adequate chemo-therapy ....	....	2	....	....	....	2	3	1	1	....	1	1	....	11
Total	26	15	19	13	9	20	11	12	8	7	8	13	4	165

TABLE 6
T.B. REACTIVATION RATES, W.A., 1964-76

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
No. of reactivations	26	15	19	13	9	20	11	12	8	7	8	13	4
As % of total cases	12.5	8.4	11.2	7.6	4.9	12.5	7.4	8.4	5.2	4.8	5.7	9.4	3.7
Per 100 000 population	3.3	1.2	2.3	1.5	1.0	2.1	1.1	1.2	0.8	0.7	0.7	1.2	0.4

TABLE 7
ANALYSIS OF W.A. TUBERCULOSIS REGISTER AS AT 31st DECEMBER, 1976
A. Pulmonary Tuberculosis (excluding Pleural Effusions)

Activity	Number on Register According to Original Extent of Lesions			Total
	Minimal	Moderate	Advanced	
Active	35	46	15	96
Inactive:				
0-1 years	17	13	7	37
1-2 years	26	43	6	75
2-3 years	21	29	8	58
3-4 years	35	36	8	79
4-5 years	30	40	9	79
5+ years	1	1	....	2
Total	165	208	53	426
B. Pleural Effusion				11
C. Non-Pulmonary Tuberculosis				98
Total All Forms				535

TABLE 8
TUBERCULOSIS INCIDENCE OF MALES BY COUNTRY OF BIRTH, W.A., 1967-76

Country of Birth	Population at June 30, 1971 Thousands (Census)	Incidence Per Thousand Persons										Total Notifi- cations 1967-76
		1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	
U.K. and Republic of Ireland	82.2	0.53	0.36	0.33	0.51	0.31	0.23	0.21	0.29	0.12	0.13	193
Germany	3.6	....	0.34	0.34	0.34	0.69	0.56	0.56	....	0.28	....	10
Greece	2.7	0.65	0.32	0.32	0.32	....	1.11	0.74	0.74	....	....	12
Italy	17.1	0.50	0.25	0.44	0.37	0.44	0.41	0.29	0.41	0.12	....	53
Netherlands	6.2	0.17	0.17	....	....	0.17	0.16	....	0.16	0.16	....	7
Poland	2.8	1.43	1.78	0.71	....	0.36	1.07	0.36	....	0.36	....	17
Yugoslavia	6.2	0.43	0.87	2.00	0.65	0.43	0.16	0.16	1.29	0.81	....	35
Other European	8.6	1.08	0.77	1.23	0.92	....	0.05	0.93	0.23	0.23	0.12	40
Other Birthplaces	23.8	0.68	1.52	0.51	1.27	0.93	0.67	0.50	0.55	0.92	0.76	139
Total non-Australian born	153.2	0.56	0.54	0.49	0.55	0.38	0.48	0.31	0.37	0.29	0.20	506
Australian born	375.9	0.20	0.19	0.15	0.12	0.12	0.22	0.12	0.10	0.13	0.09	467

TABLE 9
TUBERCULOSIS INCIDENCE OF FEMALES BY COUNTRY OF BIRTH, W.A., 1967-76

Country of Birth	Population at June 30, 1971 Thousands (Census)	Incidence Per Thousand Persons										Total Notifi- cations 1967-76
		1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	
U.K. and Republic of Ireland	74.8	0.18	0.18	0.12	0.14	0.20	0.16	0.09	0.12	0.12	0.17	91
Germany	3.5	....	....	....	0.33	0.33	....	....	....	0.86	....	5
Greece	2.3	0.43	....	0.43	....	....	0.43	0.87	0.43	0.87	0.43	9
Italy	13.4	0.08	0.08	0.33	0.08	0.41	0.15	0.15	....	....	0.07	17
Netherlands	5.0	....	....	....	....	0.22	....	....	0.20	....	0.20	3
Poland	2.0	....	1.00	2.00	....	1.00	0.50	1.00	0.50	....	0.50	13
Yugoslavia	3.9	0.34	....	....	....	0.34	0.51	0.51	0.26	0.51	0.51	11
Other European	5.9	0.68	0.45	0.68	0.45	....	0.68	0.34	....	0.71	0.34	19
Other Birthplaces	19.3	0.20	0.82	0.51	0.61	1.33	0.47	0.36	0.41	0.47	0.41	75
Total non-Australian born	130.1	0.19	0.24	0.25	0.19	0.37	0.21	0.18	0.16	0.20	0.22	243
Australian born	371.3	0.08	0.12	0.11	0.11	0.09	0.11	0.08	0.07	0.06	0.04	270

TABLE 10
FIRST ISOLATIONS OF MYCOBACTERIA*, W.A., 1976

Type	Casual Isolation	Persistent Isolations			Total
		Mycobacteriosis			
		Pulm.	Non-Pulm.	Total	
Marinum .....	....	....	3	....	3
M. Kansasii	1	....	....	3	1
Scotochromogens	12	....	....	....	12
M. intracellulare	72	10	2	12	84
Rapid Growers	5	....	....	....	5
Mixed	5	....	....	....	5
Gordonae	1	....	....	....	1
Total Patients	96	10	5	15	111

* Other than M. TB.

TABLE 11
MYCOBACTERIAL DISEASE OF LYMPH NODES IN CHILDREN, W.A., 1970-76

Year		Scoto-chromogenic mycobacteria Identified	M. intra-cellulare Identified	M. TB (Human) Identified	Cultures Negative	Total Cases
1961—1969	....	9	33	1	46	89
1970	....	3	2	....	5	10
1971	....	....	3	....	3	6
1972	....	3	7	....	5	15
1973	....	6	8	....	1	15
1974	....	2	5	....	5	12
1975	....	....	5	....	3	8
1976	....	....	2	1	2	5
Total number of children 1961-1976		23	65	2	70	160

TABLE 12
NOTIFICATIONS OF ATYPICAL TUBERCULOSIS (INCLUDING REACTIVATIONS), W.A., 1970-76

Year	M. kansasii		Scotochromogens				M. Intracellular				Rapid Growers	
	Pulm.	Other	Pulm.	Lymph Nodes	Other	Total	Pulm.	Lymph Nodes	Other	Total	Pulm.	Lymph Nodes
1955-1969	6	....	26	9	1	36	119	37	....	156	1	....
1970	3	....	2	3	....	5	11	3	....	14	....	....
1971	....	....	1	....	....	1	5	3	....	8	....	....
1972	2	....	1	3	....	4	12	7	1	20	1	....
1973	....	1	....	6	....	6	8	8	....	16	....	1
1974	2	....	....	2	....	2	9	5	....	14	....	....
1975	2	....	....	1	....	1	8	6	1	15	....	....
1976	....	3	....	....	....	....	10	2	....	12	....	....
Total 1955-1976	15	4	30	24	1	55	182	71	2	255	2	1

Plus: Two patients with mixed pulmonary disease, in 1963 and 1970.

PULMONARY TUBERCULOSIS NOTIFICATIONS ON DEATHS, W.A., 1911-76

Year						Population in 1 000s	Notifications Received	Incidence Rate per 100 000 Population	Deaths Registered	Mortality Rate per 100 000 Population
1911	....	....	....	....	....	287	259	90.2	190	66.2
1912	....	....	....	....	....	301	429	142.5	220	73.1
1913	....	....	....	....	....	313	424	135.5	206	65.8
1914	....	....	....	....	....	323	353	109.3	229	70.9
1915	....	....	....	....	....	321	336	104.7	233	72.6
1916	....	....	....	....	....	313	511	163.5	225	71.9
1917	....	....	....	....	....	306	464	151.6	217	70.9
1918	....	....	....	....	....	308	432	140.5	245	79.5
1919	....	....	....	....	....	320	467	145.9	289	91.6
1920	....	....	....	....	....	330	442	139.9	259	78.4
1921	....	....	....	....	....	334	424	126.9	277	82.9
1922	....	....	....	....	....	341	387	113.8	256	75.1
1923	....	....	....	....	....	351	361	102.8	216	61.5
1924	....	....	....	....	....	363	381	104.6	228	62.8
1925	....	....	....	....	....	373	403	108.4	259	69.4
1926	....	....	....	....	....	381	415	108.2	252	66.1
1927	....	....	....	....	....	392	409	104.3	231	56.4
1928	....	....	....	....	....	408	395	96.8	282	69.1
1929	....	....	....	....	....	421	400	95.0	245	53.4
1930	....	....	....	....	....	429	569	132.6	218	50.8
1931	....	....	....	....	....	432	372	86.1	223	51.6
1932	....	....	....	....	....	435	339	77.9	203	46.7
1933	....	....	....	....	....	439	295	67.2	207	47.2
1934	....	....	....	....	....	442	287	64.9	218	49.3
1935	....	....	....	....	....	447	270	60.4	210	47.0
1936	....	....	....	....	....	452	338	74.8	193	42.7
1937	....	....	....	....	....	457	239	53.0	172	37.6
1938	....	....	....	....	....	464	247	53.2	177	38.1
1939	....	....	....	....	....	470	202	43.0	179	38.1
1940	....	....	....	....	....	473	231	48.8	181	38.3
1941	....	....	....	....	....	474	154	32.5	185	39.0
1942	....	....	....	....	....	477	113	23.7	175	36.7
1943	....	....	....	....	....	477	273	57.3	144	30.2
1944	....	....	....	....	....	481	219	45.4	134	27.9
1945	....	....	....	....	....	488	271	55.5	149	30.5
1946	....	....	....	....	....	493	343	69.6	163	33.1
1947	....	....	....	....	....	502	372	74.0	128	25.4
1948	....	....	....	....	....	515	325	63.1	157	30.5
1949	....	....	....	....	....	533	499	93.6	123	23.1
1950	....	....	....	....	....	558	586	104.8	129	23.1

DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST

1950	....	....	....	....	....	558	586	104.8	125	22.4
1951	....	....	....	....	....	580	467	80.4	76	13.1
1952	....	....	....	....	....	601	508	84.5	75	12.5
1953	....	....	....	....	....	621	378	60.6	43	6.9
1954	....	....	....	....	....	640	348	54.3	57	8.9
1955	....	....	....	....	....	659	413	62.7	31	4.7
1956	....	....	....	....	....	677	424	62.6	43	6.3
1957	....	....	....	....	....	692	332	47.9	36	5.2
1958	....	....	....	....	....	706	355	50.3	22	3.1
1959	....	....	....	....	....	726	320	44.1	24	3.3
1960	....	....	....	....	....	731	296	40.5	29	4.0
1961	....	....	....	....	....	737	209	28.4	18	2.4
1962	....	....	....	....	....	755	243	32.2	24	3.2
1963	....	....	....	....	....	773	216	27.9	13	1.7
1964	....	....	....	....	....	790	176	22.3	20	2.5
1965	....	....	....	....	....	806	153	19.0	12	1.5
1966	....	....	....	....	....	836	134	16.0	16	1.9
1967	....	....	....	....	....	877	137	15.6	9	1.0
1968	....	....	....	....	....	910	145	15.9	8	0.9
1969	....	....	....	....	....	947	133	14.0	8	0.8
1970	....	....	....	....	....	983	113	11.5	10	1.0
1971	....	....	....	....	....	1 029	113	11.0	17	1.6
1972	....	....	....	....	....	1 053	125	11.9	8	0.8
1973	....	....	....	....	....	1 068	110	10.3	11	1.0
1974	....	....	....	....	....	1 090	104	9.5	8	0.7
1975	....	....	....	....	....	1 127	102	9.1	10	0.9
1976	....	....	....	....	....	1 145	83	7.3	4	0.4

Appendix III

Epidemiology and Special Services

R. Allen, M.B.B.S.
Medical Officer in Charge

Notifiable Diseases

Infectious disease notifications during 1976 remained at a constant level and no outbreaks were reported.

The impact of immunisation in the community is evidenced by the fact that no proven case of poliomyelitis has occurred in this State for 13 years, and there have been no cases of diphtheria for over three years. This must seem an incredible state of affairs to those persons who were involved in public health during the 1930s when notifications of diphtheria in Western Australia averaged more than 800 per year.

Malaria

Fourteen cases of malaria occurring during the year were investigated. In every case the disease was contracted outside Australia:—

Indonesia	....	....	....	....	6
Papua-New Guinea	....	....	....	....	4
Timor	....	....	....	....	4 (including 3 refugees)

Immunisation

During the year the following immunisations were carried out:—

Sabin Vaccine	....	....	....	....	57 064
Triple Antigen	....	....	....	16 412	
Combined Diphtheria and Tetanus	....	....	....	8 113	
Tetanus Toxoid	....	....	....	6 520	
Measles	....	....	....	6 987	
Rubella	....	....	....	9 219	
Miscellaneous	....	....	....	213	
<hr/>					
Total Injections	....	....	....	....	47 464
Total Treatments	....	....	....	....	104 528

Although the number of doses of Sabin Vaccine decreased predictably by 14·3 per cent, the number of injections increased by 3·7 per cent over those administered during 1975.

The Rubella campaign in secondary schools continued during the year, and a total of 47 003 year 8 girls have now received Rubella Vaccine since its introduction in 1971.

More than 2 000 injections have been given at several Tetanus Toxoid clinics which have been conducted at various Government Departments.

It is hoped during the coming year to introduce a third mobile immunisation clinic into country areas. This would prove to be a great benefit to country parents, and would permit the clinics to visit each area regularly throughout the year, thus eliminating the present long intervals that must occur between series of visits to most areas.

Appendix IV

Venereal Disease Control Branch

W. A. Newnham, M.B.B.S., Dip. Ven. (Lond.)

Venereologist in Charge

The Special Treatment Clinic has continued to function satisfactorily as a branch of the Department of Public Health, and as an Out Patients Department of the Royal Perth Hospital.

The staff has increased, and now comprises:—

- 1. Five permanent Medical Officers
- 2. Three female trained nurses
- 3. One male trained nurse
- 4. Three Health Officers
- 5. Male and female receptionists, the latter being also a shorthand typiste.
- 6. A clerical assistant, female, who is also a typiste.

The patient attendances are shown in the following table, since the Clinic was re-organised in 1971.

Year						Total Patients Attending Clinic	New Male Patients	New Female Patients	Total New Patients	Ratio Male to Female Patients
1971*	....	....	....	....	....	5 760	799	235	1 034	3·4:1
1972	....	....	....	....	....	10 786	1 615	597	2 212	2·7:1
1973	....	....	....	....	....	10 879	1 922	770	2 692	2·7:1
1974	....	....	....	....	....	15 119	2 698	1 089	3 787	2·5:1
1975	....	....	....	....	....	20 335	3 178	1 411	4 589	2·2:1
1976	....	....	....	....	....	28 373	4 069	1 830	5 899	2·2:1

* Present Clinic re-organised and opened on 8th November, 1971.

In addition, the branch of the State Health Laboratory, situated on site, has increased its workload dramatically. Details can be seen in the report of the State Health Laboratory.

CONTACT TRACING

Each new patient, or re-infected patient, is seen by one of the Health Officers (Contact Tracing Officers). Not only is the interview used for tracing the source of an infection, but it is also used as a means of promoting health education in regard to the sexually transmitted diseases. The ratio of 2·2 males to 1·0 females, is a definite improvement on that of 3·4 to 1, as shown in the 1971 figure.

NOTIFICATIONS OF VENEREAL DISEASE, W.A., 1975-76—AGE AND SEX DISTRIBUTION

(A) MALES

Year				0-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	Over 35 Yrs.	Age Not Stated	Total
1975	....	....	....	9	308	545	348	159	302	27	1 698
1976	....	....	....	11	275	484	340	176	287	84	1 657

(B) FEMALES

1975	31	296	270	145	77	124	7	950
1976	29	271	283	122	58	127	28	918

(C) SEX UNSPECIFIED

1976	3	2	1	1	1	10	18
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The highest incidence in males is between the 20–24 years of age bracket. In previous years, the highest incidence in females has been in the 15–19 year age group, but in 1976 the highest incidence shifted into the 20–24 year age bracket.

VENEREAL DISEASE, W.A., 1975-76—AGE DISTRIBUTION

Year				0-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	Over 35 Yrs.	Age Not Stated
				%	%	%	%	%	%	%
1975	....	....	....	1·51	22·80	30·77	18·61	8·91	16·08	1·28
1976	....	....	....	1·54	21·17	29·66	17·86	9·06	16·00	4·70

1975—15-24 Age Group represents 53·57% of venereal disease reported in Western Australia.
15-29 Age Group represents 72·18% of venereal disease reported in Western Australia.
1976—15-24 Age Group represents 50·83% of venereal disease reported in Western Australia.
15-29 Age Group represents 68·69% of venereal disease reported in Western Australia.

It is in this age group bracket where most people have children. The necessity for ante-natal syphilitic serology is obvious if congenital syphilis is to be eradicated from our community. It can be said that the incidence of congenital syphilis is an indication of syphilis in the adult portion of the population. This would be true if all cases of syphilis were notified to the Department of Public Health, which is not so. In an article titled “Estimate of Annual incidence of undiscovered Syphilis” in The British Journal of Venereal Disease (1973) 49 249 written by W. F. Felton, St. Thomas’s Hospital, London, it is suggested that for every ten cases of syphilis diagnosed in males, seven are undiscovered. For every ten cases of syphilis diagnosed in females, there are ten cases undiscovered. It follows that doctors practicing clinical medicine should be more aware of syphilis in the community.

VENEREAL DISEASE, W.A., 1967-76

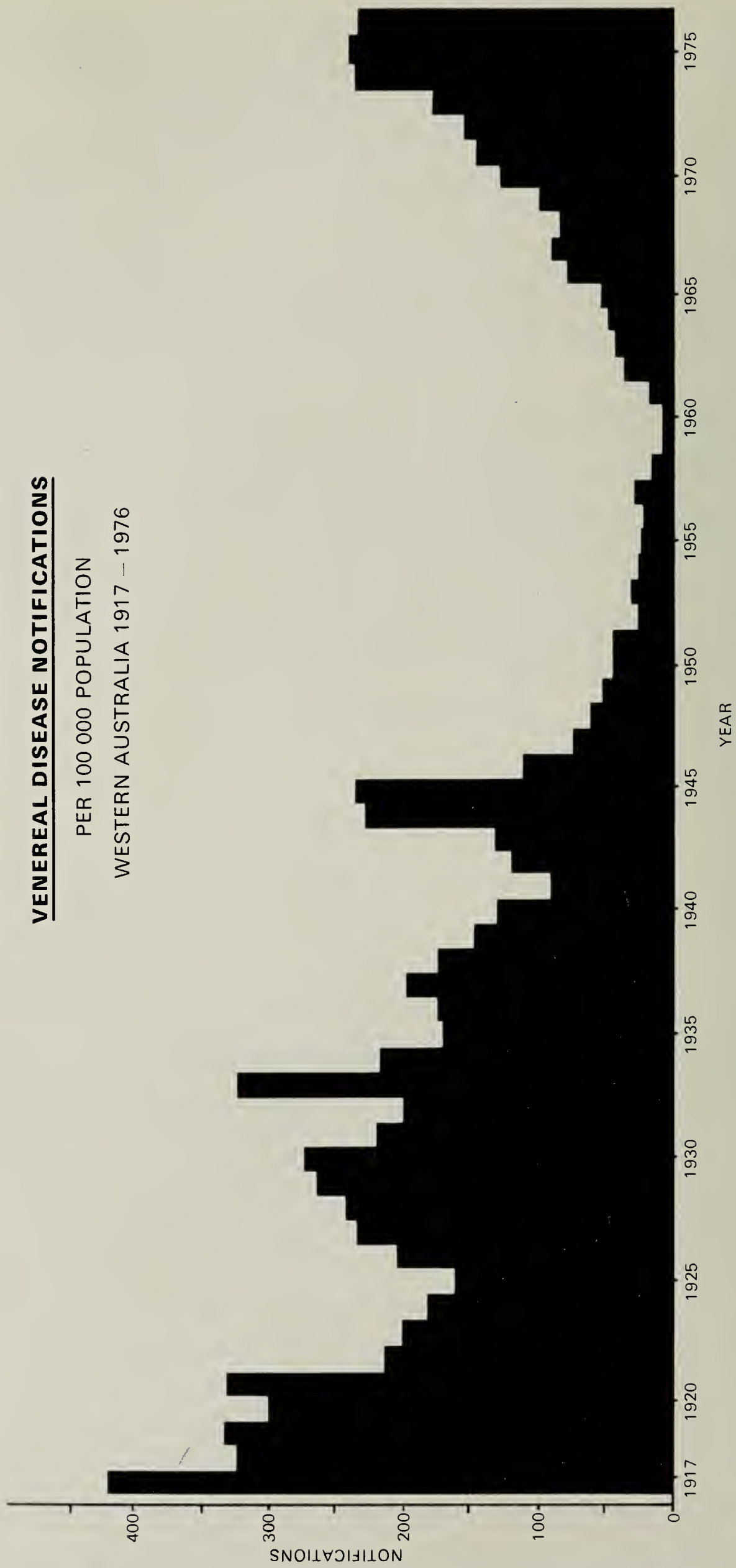
Year				Gonorrhoea	Syphilis	Granuloma	Chancroid	Total Venereal Diseases
1967	....	....	....	796	41	....	2	839
1968	....	....	....	718	60	1	....	779
1969	....	....	....	817	209	....	2	1 028
1970	....	....	....	1 166	159	3	....	1 328
1971	....	....	....	1 236	254	2	1	1 493
1972	....	....	....	1 467	258	2	1	1 728
1973	....	....	....	1 657	290	2	3	1 952
1974	....	....	....	2 032	436	1	6	2 475
1975	....	....	....	1 977	657	5	9	2 648
1976	....	....	....	1 932	653	1	7	2 593

It was shown in the 1975 report that there was a slight drop in the notifications for gonorrhoea over the year 1974. Similarly, there has been a drop in the 1976 figures for gonorrhoea when compared with 1975. The actual percentage drop is 2·28 per cent. Syphilis showed a decrease in 1976 figures over the 1975 figures, and this is the first time since 1955 that this has occurred. The decrease represents a percentage drop of 0·61 per cent. The total figures for the notified cases of venereal disease since 1916 are shown in the form of the histogram below.

VENEREAL DISEASE NOTIFICATIONS

PER 100 000 POPULATION

WESTERN AUSTRALIA 1917 - 1976



It cannot be said at this stage (1976), that there will be a steady decline over the next few years, but consideration of the above table indicates that this could be so.

FREMANTLE HOSPITAL CLINIC

This clinic also functions in the Out Patients Department of the Fremantle Hospital from 4.30 p.m. to 6.30 p.m. on Mondays and Wednesdays of each week. Both males and females are seen in each Clinic by appointment. The following figures show the position at the Fremantle Hospital Clinic.

	Male Patients	Female Patients	Total
Total Attendances	781	315	1 096
Positive Gonococcal Infections	26	11	37
Positive Syphilis Infections	2	3	5

COUNTRY AREAS

Lecture tours were made by Medical Officers in the Clinic into various country areas. These included—

1. A tour to Wyndham encompassing all the coastal towns and the important centres in the Kimberley region.
2. A tour to Kalgoorlie, Norseman and Kambalda.
3. A tour to Exmouth with contacts made in towns en route.
4. A shorter tour to all towns to Dalwallinu.
5. A tour to Esperance via Albany, encompassing various towns en route. In all these areas, lectures were given to Medical Officers, Matrons and nursing staff of hospitals, and to the Community Health Service employees.

STATE HEALTH LABORATORY

Apart from the microbiology conducted at the Special Treatment Clinic, the virus laboratory of the State Health Laboratory Service continued with the identification of Chlamydia, Cytomegalo and Herpetic viruses. For practical purposes, the Chlamydia has been grouped in the virus group. Examinations for these viruses are carried out routinely at the Special Treatment Clinic.

Papanicolaou smear is also routine examination in the female section of the Clinic. These slides are examined at the Royal Perth Hospital.

LECTURES

Lecturing was continued to medical and para-medical groups in 1976. Lectures in non medical areas were conducted at Claremont Teachers Training College, Police Department, and the Secondary Schools Training College.

CO-ORDINATING COMMITTEE FOR THE CONTROL OF V.D. IN W.A.

In March, 1976 the Co-Ordinating Committee for the Control of Venereal Diseases in Western Australia was formed, and held its first meeting on 5th April, 1976.

- Dr. D. D. Letham (Chairman)—Retired, formally Department of Public Health.
- Mr. S. W. Fleming (Secretary)—V.D. Control Branch, Department of Public Health.
- Mr. J. T. Carr—Executive Officer, Health Education Council of Western Australia.
- Mr. H. Loudon—Asst. Director-General (Schools and Services) Department of Education.
- Dr. E. M. Mackay-Scollay—Microbiologist in Charge, State Health Laboratories.

Prof. J. D. Martin—Professor of Obstetrics & Gynaecology, King Edward Memorial Hospital.

Dr. W. A. Newnham—Venerologist in Charge, V.D. Control Branch, Department of Public Health.

Dr. K. C. Nyman—Chairman, Royal Australian College of General Practitioners.

Dr. Francis Quadros—Deputy Director of Community and Child Health Services.

The Committee was formed to be responsible to, and make recommendations within terms of reference approved by the Commissioner of Public Health.

MISCELLANEOUS

It is important to thank members of the Clinic, medical and non-medical, for their co-operation and zeal during 1976.

Also, gratitude is expressed for assistance and co-operation from the Royal Perth Hospital Laboratory staff, the administration staff at Head Office of the Department of Public Health, the Health Education Council of Western Australia, and the Fremantle Hospital staff.

The co-operation of the Commissioner of Public Health and Medical Services and the Director-General of Public Health was appreciated.

Finally, gratitude must be expressed to the Minister for Health, the Hon. Mr. Norman Baxter, M.L.C.

Community and Child Health Services

R. W. Roberts, M.B., B.S., F.R.A.C.G.P., D.C.H.

Director

INTRODUCTION

1976 has seen the amalgamation of the Community Health and Child Health Services Branches under one medical and administrative structure. Whilst this did not occur until the latter part of the year, already there have been steps forward in eliminating duplication of effort and service in several areas.

The Nursing Sections have remained separate and should remain so for some time, particularly in view of the differences in training and function of the various Sections. In addition, disparities in the Industrial Awards makes amalgamation difficult. Steps are being taken to rectify this situation.

Preventive health services has shared with all Government Instrumentalities in a cut-back in finance and resultant activity. 1976 has therefore been a year of consolidation, of increased efforts to improve quality rather than quantity of service.

COMMUNITY HEALTH SECTION

The end of 1976 marks the completion of five years of field operations for Community Health Services.

Whereas the establishment of the organisation saw phases of rapid development and changes to basic policies during its formative years, 1976 hailed the start of an era of consolidation.

Administratively the amalgamation with Child Health Services should serve to solve many of our previous problems of direction and stability, as well as eliminating those areas where duplications of services may have occurred in the past.

Recruitment of suitable medical and nursing staff continued to be a problem in 1976 particularly in the more remote areas of the State. However, there were signs at the end of the year that the situation was improving.

A reputation for dealing exclusively with Aborigines is giving way to an awareness that Community Health Services deals with the entire spectrum of the socially and economically disadvantaged. This awareness is encouraging highly qualified professionals to join the Section.

In common with most government departments, Community Health Services funds were lower in real terms than in previous years, necessitating a tightening up on expenditure and careful monetary control.

Liaison with allied organisations continued to improve in 1976. The Royal Flying Doctor Service, the Aboriginal Medical Service, the Royal Nursing Federation, the Australian Medical Association, the Medical Board of Western Australia and the Princess Margaret Hospital are just some of the institutions which are beginning to appreciate the concept, objectives and methods of a community based health service.

Overall, the situation of Aborigines improved in 1976, especially where individuals have accepted the challenge of self actualisation and have influenced the development of their communities. The Aborigines of the Central Desert Reserves area have been notably adventurous in pooling their resources and working positively for the improvement of their settlements, and deserve encouragement and assistance.

New activities undertaken during 1976 included an involvement with a Multiple Sclerosis Home Nursing Service and the responsibility of supplying staff for the Royal Flying Doctor Service at Carnarvon, Jandakot and Kalgoorlie Centres.

Lake Varley Community Health Programme Centre commenced on 4th December, Cundeelee Nursing Outpost was taken over by Community Health on 1st July 1976 and the Looma Nursing Outpost was re-opened on 18th March, 1976.

STAFF TRAINING

Orientation programmes were provided for nursing staff in the following categories:—

General Programme for Registered Nurses	....	....	71 officers attended
Programmes for Flight Nurses	....	....	18 officers attended
Re-orientation for returning staff	....	....	2 officers attended
Re-orientation for Field Instructor	....	....	1 officer attended
Aides and Assistants	....	....	14 officers attended
Medical Officers	....	....	5 officers attended

Programmes continued to be updated and changed in order to maintain relevance and effectiveness.

Four Aboriginal assistants were awarded Scholarships for Overseas Study Tours. Mrs. Lorna Little and Mr. Robert Isaacs visited North America and observed changing preventive health programmes, especially on Indian reservations.

Mr. and Mrs. Fred Collard spent three months in New Zealand investigating Maori “self help” facilities and developments in pre-schooling techniques.

Three field nurses completed the Diploma of Community Nursing at the Western Australian College of Nursing and six field nurses commenced this course at the Western Australian Institute of Technology. Eight Aides and Assistants have attended observation visits at the special clinic in Perth between June and December 1976, while a number of male Assistants attended sessions on methods of pest control in homes. Safety methods were also incorporated in this course.

Aboriginal Liaison Officers Course at W.A.I.T.

Three metropolitan Assistants and one from the South West Region successfully completed this ten week course at W.A.I.T. while one Assistant Mrs. L. Little completed a bridging course.

Rape Crisis

Health Services staff participated in a course on the counselling of rape victims and their families. The principal role of Health Services will be a supportive one. Revised programmes will be presented in Kalgoorlie, Port Hedland and the South West in 1977.

Workshops

Workshops for field aides and assistants were held at Pundulmurra, South Hedland (27 persons attended), and Agricola College, Kalgoorlie (28 persons attended). The theme was “The Child Within the Family”.

A workshop for 120 medical and nursing staff was held at St. John of God Hospital, Subiaco, 25–29 October. The “Minority Groups” theme of the conference was given wide attention and sessions were also set aside for clinical topics such as Trachoma, Hansens Disease, and Family Planning.

ABORIGINAL POPULATION (Estimated only)

Aboriginal Population as at 30th June 1976
(provided by Bureau of Census & Statistics)

Community Health Services			Statistical Division		Male	Female	Total	
Region		Area						
Kimberley	{ Northern	....	2 639	2 378	5 017
				{ North East	....	1 591	1 548	3 139
Pilbara	North West	....	2 348	2 269	4 617
South West	Southern	....	4 017	4 064	8 081
Eastern Goldfields		Eastern	....	1 703	1 719	3 422
Metropolitan	Perth	....	3 602	3 859	7 461
Northern	North Central	....	1 269	1 325	2 594
						17 169	17 162	34 331

During the year records have been converted from the old 8 by 4 cards to a problem oriented health record system and these are still currently being up-dated at the time of writing of this report. It is evident that more than 75 per cent of the Aboriginal population have had contact with this service throughout the State.

The aim of the service has been to develop people to utilise existing facilities rather than creating separate services; however, in some cases these will be necessary to meet with the expectations of the target population.

ABORIGINAL BIRTHS

Figures reveal that there has been very little change in the number of births over the last six years.

See Appendices 1-5.

MORBIDITY STATISTICS (see Appendices 6-8)

Morbidity in order of priority:

HOSPITAL DISCHARGES

Aboriginal	Non-Aboriginal
1. Respiratory System	1. Accidents
2. Accidents	2. Pregnancy and Child Birth
3. Infective and Parasitic	3. Genito-Urinary
4. Ill-Defined	4. Respiratory System
5. Nervous System and Sense Organs	5. Digestive System
6. Pregnancy and Child Birth	6. Circulatory System

It is interesting to note that in 1971 infective and parasitic was a principal group in discharges of Aboriginal patients. In 1975 it is third on the list with respiratory infection and accidents and poisoning moving above it in incidence. This is an index of improved state of health within this section of the community.

Average Number of Bed Days for all Diseases:

Aborigines — 9·7 days Non-Aborigines — 7·6 days

Ratios of Average Number of Bed Days:

	Aboriginal	Non-Aboriginal
Infective and Parasitic	2	1
Accidents	1	1
Respiratory Disease	1·3	1
Digestive	1	1

NUTRITIONAL ANTHROPOMETRY

There is little change in the situation between 1975 and 1976. (See Appendix 9.)

The percentage of children below the normal range of weight for height is around 5 per cent and does *not* increase with age. It is higher in the first year of life than in subsequent years. This probably reflects primarily the level of gastroenteritis in this age group.

The percentage of children below the normal range of height for age is around 20 per cent and increases steadily with age. The situation in the youngest children is not at present clear, but it is possible that in about one quarter of the children with height for age below the normal range the cause is small size at birth rather than post-natal malnutrition. In the remaining three quarters, however, it appears to be the result of chronic retardation in growth and probably reflects the extent of inadequate environmental conditions.

HEALTH EDUCATION

This still remains our priority and staff at all levels try to change attitudes and behaviour at every point of contact.

Type of Service							Schools	General Community
Number of Lectures/Talks/Films to Groups							752	503
Number of Group Activities including:—								
Demonstrations, Cookers, Carpentry, Home Management							140	778
Play Groups—Pre-School							165	155
Senior Activities							5	114

IMMUNISATION

Immunisation with Triple Antigen has been most successful and there is over 85 per cent cover, whereas measles immunisation still requires a concerted effort to be brought to a reasonable level. Greater efforts are to be made during the coming year to achieve this. There have been no deaths reported during 1976 from any of the diseases immunised against.

ENTERIC DISEASES

There has been a decrease of isolation of A. Duodenale during the year compared to 1975 and the cases seen in the Pilbara and Northern Region are usually from people moving down from the Kimberley, usually students. In the metropolitan and South West Regions these cases are mainly from migrants.

There has been an increased isolation of Giardia Lamblia, most often asymptomatic.

TRACHOMA

Ages							Grades*		
							0	1 and 2	3 and 4
0— 5	....	....	....	....	....	....	646	424	46
6—15	....	....	....	....	....	....	6 146	1 187	598
15—60	....	....	....	....	....	....	1 881	1 070	742
61+	....	....	....	....	....	....	175	142	406
All ages							8 848	2 723	1 792

Number of Persons Treated: 3 624
Surgical Intervention: 27

- *Grade 0 — No Pathology
- Grade 1 — Immature follicles
- Grade 2 — Mature follicles—Herberts Pits
- Grade 3 — Scarring
- Grade 4 — Scar Tissue—Non Infectious

The College of Ophthalmologists and the Western Australian University Department of Ophthalmology have continued to give specialised back up services for eye ailments particularly in the Northern areas. Individual and mass treatment programmes have been carried out during the year, throughout the State.

HANSENS DISEASE (See Appendices 10 and 11)

21 cases of Hansens were notified during the year. These were:

Tuberculoid	....	....	....	....	13
Lepromatous	....	....	....	....	6
Indeterminate	....	....	....	....	1
Borderline	....	....	....	....	1

Dr. Davidson continued to be the Consultant Leprologist for the Public Health Department and Dr. Spargo has continued as Medical Superintendent of the Derby Leprosarium.

In the Metropolitan area the Hansens Control Clinic Report:

- 650 people screened and tested for Hansens disease at the Clinic.
- 1 276 home visits.
- 413 children screened in Hostels, Homes, Institutions, etc.
- 4 people hospitalised.
- 2 people discharged from Hospital.
- 22 on Chemoprophylaxis.

In the rest of the State checks were conducted, particularly in the Northern areas.

Age Groups							No. Checked	
							A	N/A
0—5 years (Pre-School)							1 112	275
From 6 to 15 years (Schools)*							3 051	7 697
From 16 years							5 209	820

* This includes all those examined at school medicals.

TUBERCULOSIS

The incidence of tuberculosis in 1976 amongst Aborigines is half what it was five years ago. It corresponds approximately to the incidence in the migrant (non-aboriginal) population, and is approximately three times the overall incidence in Western Australia. (See Appendices 12 and 13.)

The actual number of notifications is small, over a five year period amounting to 51 only. (See Appendix 14.)

ANAEMIA (See Appendix 15)

Less than 6 per cent of families screened out of a total number of 2 008 showed haemoglobin levels below 10·5 grams per 100 mls. Many of these were associated with pregnancy and others were associated with hookworm infestation. Less than 5 per cent of males had haemoglobin less than 10·5 grams. These were attributable to blood loss from injuries or from hookworm.

FAMILY PLANNING

Acceptance and Practice of Family Planning by Method

Year		Method				
		Mucous/ Rhythm	Pill	I.U.D.	Surgical	Others
1975	....	....	357	263	201	9
1976	....	41	314	237	224	23

SPECIFIC MEDICAL AND SOCIAL PROBLEMS

Problem	New Cases Detected		Known Cases on Treatment or Follow-up	
	A	N/A	A	N/A
Diabetes	51	3	233	23
Urinary Infection	243	21	100	12
Hypertension	89	238	309	148
Obesity	267	307	399	109
Carcinoma Breast	5		3	
Carcinoma Cervix	3		12	

ALCOHOLISM

Age and Sex—Specific Rates* for Discharges from
W.A. Hospitals from 1971, 1975

(Where Alcoholism is a Principal or Secondary Condition)

Age Group					Male		Female	
					1971	1975	1971	1975
0—14					0·1	0·4	0·1	0·2
15—24					4·4	8·0	0·5	0·9
25—44					16·0	38·1	1·6	3·1
45—64					23·7	46·9	6·8	10·2
65+					8·7	16·2	2·4	4·1
Total					10·1	22·1	1·9	3·4

* Rates per 1 000 hospital discharges (not population rates).

It will be noted that the incidence of hospital admission for alcoholism has risen sharply in the past four years. The rate has doubled in both sexes.
The audit figures (see Appendix 16), indicate that the group with the highest incidence are those over forty years of age.

ANTENATAL CARE

It is encouraging to note that a greater number of clients are seeking antenatal care during the first trimester. The majority of women have had some antenatal care prior to delivery and only 16 are known to have had no prior care.

POST NATAL CARE

This still depends on the available services provided by the local practitioners and the appreciation of this care by clients.

SCHOOL EXAMINATIONS

Full school examinations carried out north of the 26th parallel—6 588.
Hygiene checks throughout the State—26 328 (includes checks for pediculosis, scabies, impetigo etc.).

Referrals to Specialists, General Practitioners and other Agencies:

Reasons for Referral								Aboriginal	Non-Aboriginal
Speech	....	....	....	....	....	....	....	16	37
Ears	....	....	....	....	....	....	....	323	166
Eyes	....	....	....	....	....	....	....	195	224
Dental	....	....	....	....	....	....	....	549	851
Skin	....	....	....	....	....	....	....	152	94
Skeletal	....	....	....	....	....	....	....	18	15
Cardio Vascular		....	....	....	....	....	....	76	17
Obesity	....	....	....	....	....	....	....	18	101
Others	....	....	....	....	....	....	....	5	13
Total Referrals								1 052	1 518

SIGHT, HEARING AND LIMB CONSERVATION

								Examinations	Referrals to Specialists
Sight: Varied Tests (adults)	....	....	....	....	....	....	....	877	421
Hearing, Audiometric Tests	....	....	....	....	....	....	....	880	286
Limbs examined for deformities, burns, contractures, etc.	....	....	....	....	....	....	....	521	144

DENTAL HEALTH

Two dentists, Mr. Ron Whatmough and Mr. Ian Alderdice, conducted clinics for Community Health Services throughout the State during 1976—particularly in the remote areas.

The policy has been to give children high priority. Examinations have been given to all the children in every area visited and treatment arranged.

Greatest satisfaction was in completing all 1 500 children in Carnarvon, requiring approximately 1 400 fillings.

MULTIPLE SCLEROSIS

Involvement with multiple sclerosis commenced in August with the appointment of Sister Norma Payne.

Initial activities centred principally on making the service known. Important links have subsequently been forged with the Multiple Sclerosis Society, the Silver Chain Association, the Braille Society, Red Cross and extended care personnel in many hospitals.

The aim has been to build up a continuous information centre while the service is established. At the end of 1976 there were approximately sixty disabled people receiving regular follow-up care. Lack of knowledge of the disease by both multiple sclerosis sufferers and their relatives is one of the greatest causes of stress and anxiety.

One of the more serious problems faces those mature patients who do not qualify for invalid allowances. Surviving alone with limited pensions which can be quickly lost in paying for household help limits the possibilities for meaningful independence, and leaves only the alternative of institutionalisation with aged persons for company.

RHEUMATOID ARTHRITIS

Field Nurses

Three field Officers are covering the South West portion of the State, extending to Geraldton in the North, Esperance in the South and Kalgoorlie in the East. The total number of home visits made was 1190.

Public education has taken the form of talks to groups ranging from the C.W.A. to Nursing Services. General Practitioners have become aware of the work of the Rheumatoid Arthritis Foundation and are referring patients more readily. Over 300 patients have been seen by this service in Albany, Bunbury and Manjimup. Scheduled circuit visits take place at approximately eight week intervals.

COMMUNICATIONS AND ESCORT

During 1976, this section continued to protect the interests of clients referred from remote areas to remedial centres in Perth.

Staff accepted the responsibility of assisting 706 clients discharged from hospital, and personally undertook 46 escort flights to various parts of the State.

They also undertook 17 meetings with senior staff of allied organisations to publicise their activities. Due to improved liaison with the Medical Department, Royal Flying Doctor Service and Community and Child Health Services field staff, the number of escort assignments is gradually falling, allowing staff to concentrate on the flow of information between clients in city hospitals and their relatives living in the country.

FLYING NURSES

Combined R.F.D.S. flights for 1976 totalled 2 623 and a total of 23 625 out-patients were seen. 3 894 patients were evacuated to various centres in order to receive medical attention.

C.H.S. flying sisters were involved in the majority of these actions and were stationed at the following centres: Jandakot, 3 full time sisters; Carnarvon 1; Port Hedland 3; Derby 2; Wyndham 2; Kalgoorlie 2.

MEDICAL AUDIT

The total number of clients examined in the Northern Region was 758, in the following centres:

Mt. Magnet	....	....	....	90
Cue ....	....	....	....	112
Meekatharra	....	....	....	237
Wiluna	....	....	....	199
Yalgoo	....	....	....	36
Denham	....	....	....	40
Useless Loop	....	....	....	44

This brings a total of 1 900 people examined in this region.

In the Pilbara the audit commenced in mid July and 475 persons were examined: 213 at Strelley, the rest at Port Hedland.

In the metropolitan area 192 examinations were conducted.

SPECIAL PROJECTS

1. In the Swan Valley, a health care delivery system based on a caravan clinic in middle Swan was provided for itinerant grape pickers during the grape-picking season. Grape pickers were camped on properties under the Swan and Guildford Bridge. The camps have no clean water supply, sanitation or housing. The latter is often improvised by scraps and old car bodies. Morbidity amongst this group was usually due to trauma, alcohol being a contributing factor in many instances. Gastroenteritis was surprisingly infrequent considering the sanitation and hygiene of the camps. It is recommended that as grape picking will continue in the foreseeable future and will attract seasonal itinerant pickers, provision should be made for dormitory accommodation or properly laid out camps for the pickers with ablution blocks and toilets and proper water for cooking and drinking.
2. Factory Hand Course at Belmont.
This project was an attempt made by Community Health Services to provide wood working facilities in a back yard centre for Aboriginal males who are unemployed, in an effort to help them occupy themselves usefully. Funding was provided by the Commonwealth Department of Employment and Adult Aboriginal

Education provided a full time instructor. A three week exhibition of furniture was held locally and stimulated a lot of interest.

The project has outgrown its present premises and hopefully funds will be provided in the new year for the course to continue, as it has attracted much interest.

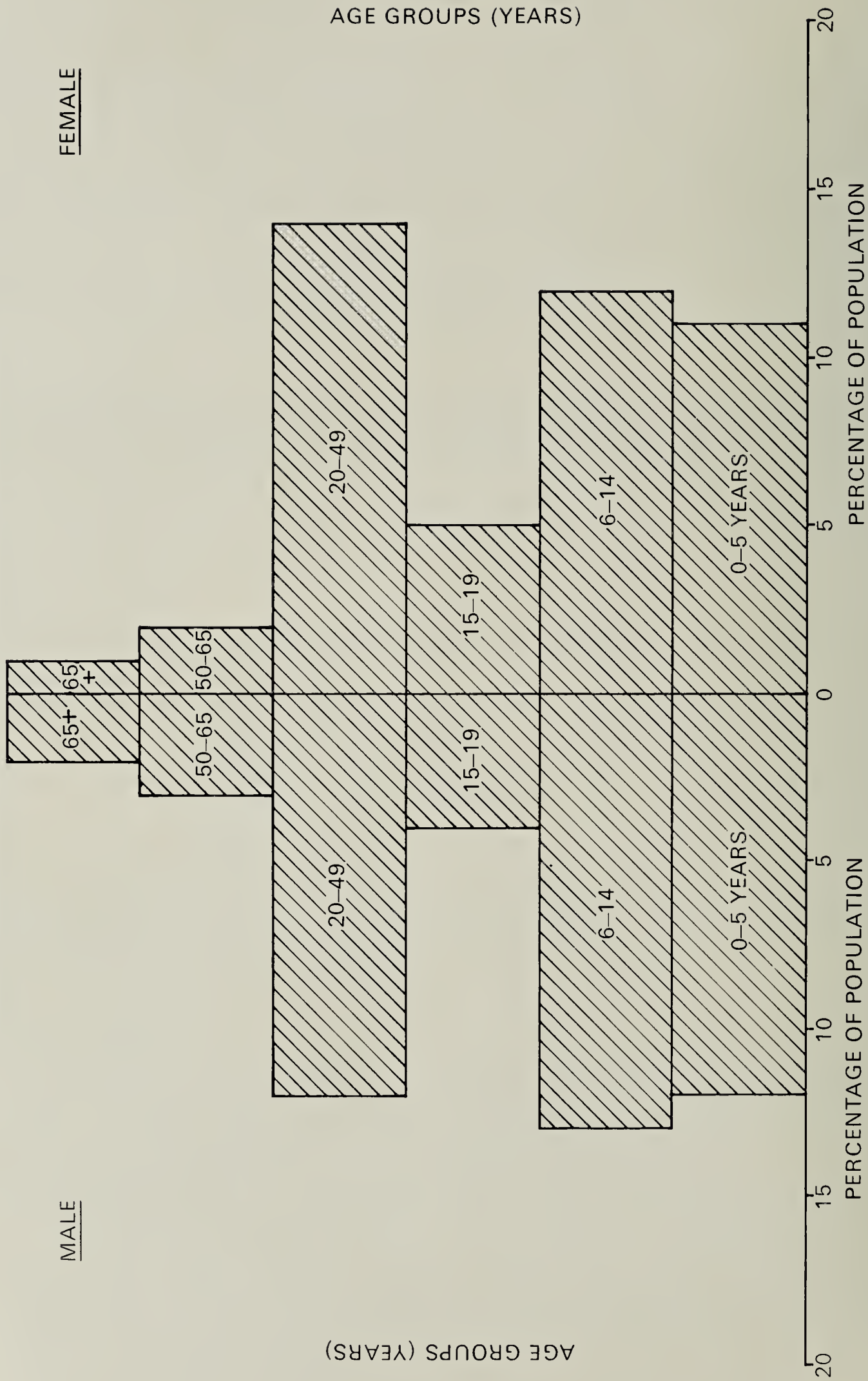
3. A study was made of the homeless East Perth Aborigines. The main problem in this area is the skid row population, sleeping rough, either in the open, in vacant lots, abandoned or decaying houses and some in lodging houses. This multi-faceted problem requires a multi-departmental project to find the necessary solution. Rehabilitation will be physical, social and psychological.
4. The Northern Region have had several surveys during the year including a geriatric and pension survey, a dietary survey and a paediatric haemoglobin survey which is currently in progress.

The Anthropologist has reported on the needs of Carnarvon Reserve dwellers and has been involved in schools discussing problems faced by teachers in a cross cultural setting.

5. Records.

Much work has been done during this year to improve our recording system and without the assistance of the Automatic Data Processors this could not have been possible. With the improved methods of recording a much more profitable method of evaluation of problems and needs will be forthcoming.

APPENDIX 1
POPULATION DISTRIBUTION AGE/SEX COMMUNITY HEALTH CLIENTS



All information is from the computerised Health Records information.
NOTE: 1. 89% of all Community Health Clients are of Aboriginal descent.
2. Total number of clients on computer files to date is 26 689.
3. 51% of Community Health clients are female; 49% are male.

APPENDIX 2

RACE—SPECIFIC¹ TOTAL BIRTHS² BY STATISTICAL DIVISION, W.A., 1976

Statistical Division	White	Aboriginal		Other	Total ³
		Full-blood	Caste		
Perth	12 877	6	128	343	13 354
Upper Great Southern	459	2	43	4	508
Midlands	967	2	56	11	1 036
South West	1 450	1	31	8	1 490
Lower Great Southern	704	....	52	10	766
Central	790	21	135	19	965
South-Eastern	792	42	61	11	906
Pilbara	791	32	64	33	920
Kimberley	148	152	110	16	426
Unknown ⁴	63	1	1	4	69
Total	19 041	259	681	459	20 440

FOOTNOTES:

- ¹Race refers to “race-of-baby”.
- ²Source: Midwives Regulations (Health Act) Form 2, includes live and stillbirths.
- ³Totals do not agree with figures published by Australian Bureau of Statistics (from Registrar-General’s Data), as their tabulations are by year of registration of birth, which is not necessarily actual year of birth.
- ⁴The category “unknown” (Statistical Division) includes all births where the mother’s usual place of residence was unknown, or not stated on the Notification.

APPENDIX 3

MATERNAL MORTALITY—MATERNAL DEATHS, W.A., 1972-1976

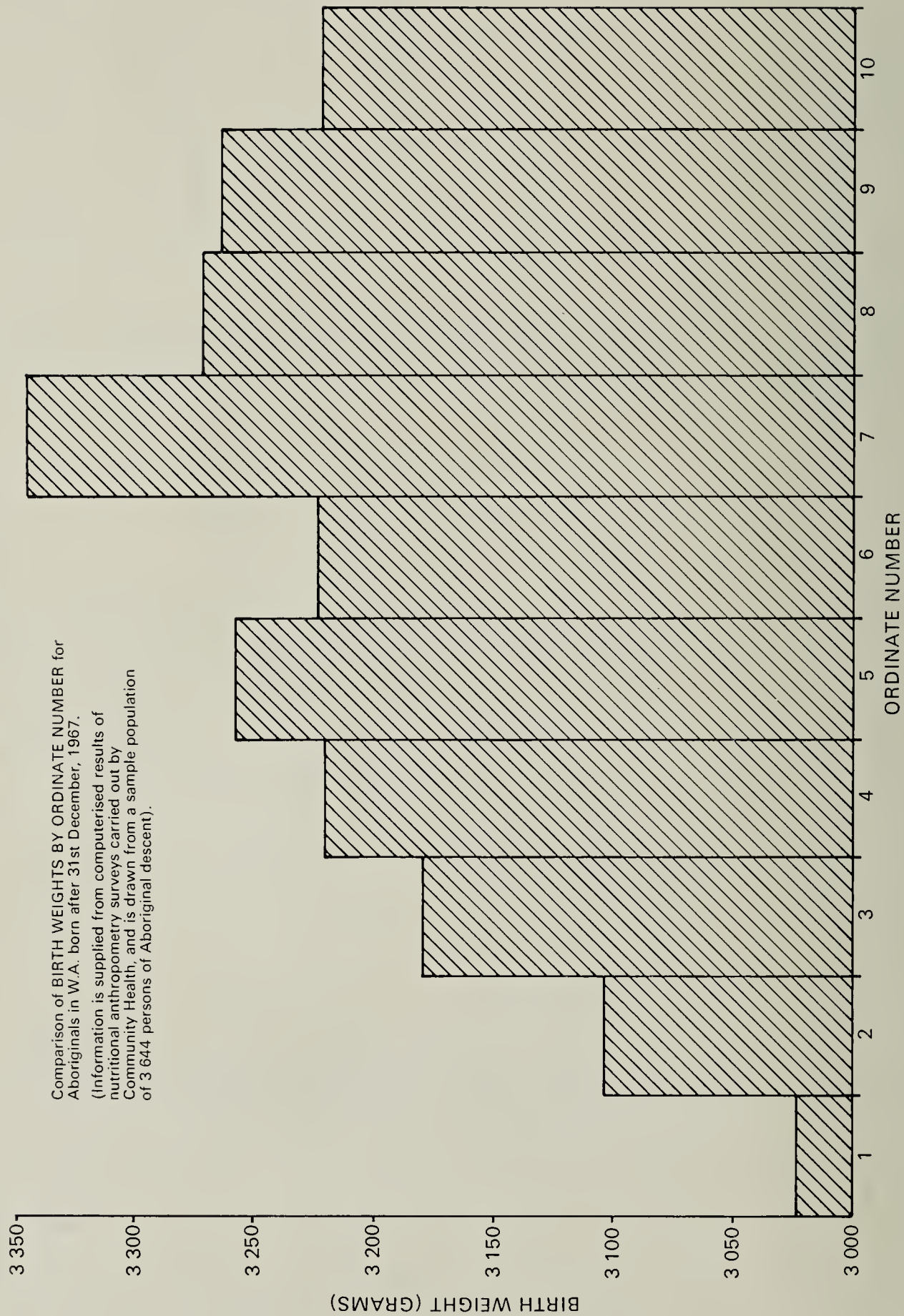
Year	Aboriginal	Non- Aboriginal	Total
1972	1	2	3
1973	1	3	4
1974	1	1	2
1975	0	4	4
1976	1	2	3

APPENDIX 4

SEX—SPECIFIC ABORIGINAL BIRTHS KNOWN TO COMMUNITY HEALTH SERVICES BY REGION, W.A., 1968-1976

	1968		1969		1970		1971		1972		1973		1974		1975		1976	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
(a) Kimberley West	47	40	47	61	71	52	96	81	86	91	101	78	103	76	88	90	103	83
(b) Kimberley East	32	27	40	27	42	40	45	60	44	54	64	40	46	44	50	42	49	50
(c) Pilbara	33	32	30	38	34	42	55	51	67	46	55	40	66	48	62	64	53	42
(d) Northern	48	54	37	61	62	38	66	69	59	50	57	50	81	65	63	48	42	40
(e) Goldfields	53	37	42	46	47	39	43	51	59	56	54	62	36	50	48	50	50	56
(f) South West North	34	35	33	32	47	48	60	47	68	54	66	57	57	54	77	58	50	50
(g) South West South	36	42	34	32	42	42	47	42	42	39	59	53	45	44	67	39	46	49
(h) Metro North	38	29	27	21	38	29	25	26	28	29	32	37	27	42	35	45	24	37
(j) Metro South	26	38	47	43	39	47	52	49	50	40	49	37	48	43	41	43	30	40
Total	347	334	337	361	422	377	489	476	503	459	537	454	509	466	531	479	447	447
Total (Sexes Combined)	681		698		799		965		962		991		975		1 010		894	

APPENDIX 5
COMMUNITY HEALTH SERVICES



APPENDIX 6
W.A. HOSPITALS 1976—PATIENTS DISCHARGED BY RACE AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition Groups	Discharges				Total
		Aboriginal		Non-Aboriginal		
		Number	% for Group	Number	% for Group	
000-136	Infective and Parasitic	2 424	21·5	8 837	78·5	11 261
140-239	Neoplasms	89	0·9	9 434	99·1	9 523
240-279	Endocrine, Nutritional, Metabolic	338	11·1	2 705	88·9	3 043
280-289	Blood and Blood Forming Organs	102	7·8	1 211	92·2	1 313
290-315	Mental Disorders	292	4·7	5 869	95·3	6 161
320-389	Nervous System and Sense Organs	1 301	9·9	11 806	90·1	13 107
390-458	Circulatory System	460	2·8	16 086	97·2	16 546
460-519	Respiratory System	3 468	12·1	25 292	87·9	28 760
520-577	Digestive System	524	2·3	22 445	97·7	22 969
580-629	Genito-Urinary System	678	2·6	25 884	97·4	26 562
630-678	Pregnancy and Childbirth	1 276	4·6	26 660	95·4	27 936
680-709	Skin and Subcutaneous Tissue	957	11·7	7 228	88·3	8 185
710-738	Musculoskeletal System	251	1·9	13 248	98·1	13 499
740-759	Congenital Anomalies	48	1·9	2 457	98·1	2 505
760-779	Perinatal Morbidity	63	10·6	533	89·4	596
780-796	Symptoms and Ill-defined Conditions	1 472	7·3	18 796	92·7	20 268
N800-N999	Accidents, Poisoning, Violence	2 476	8·0	28 531	92·0	31 007
Y00-Y89	Supplementary Classifications	602	3·0	19 299	97·0	19 901
	Total	16 821	6·4	246 321	93·6	263 142

APPENDIX 7
W.A. HOSPITALS 1976—RACE-SPECIFIC LENGTH OF STAY BY PRINCIPAL CONDITION TREATED

I.C.D. Categories	Principal Condition Groups	Average Number of Days in Hospital			% of Total Bed Days		
		Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total
000-136	Infective and Parasitic	11·0	5·6	6·7	1·31	2·41	3·72
140-239	Neoplasms	15·0	11·9	11·9	0·07	5·51	5·57
240-279	Endocrine, Nutritional, Metabolic	16·6	15·7	15·8	0·28	2·07	2·35
280-289	Blood and Blood Forming Organs	10·1	6·3	6·6	0·05	0·37	0·42
290-315	Mental Disorders	14·5	16·7	16·6	0·21	4·80	5·01
320-389	Nervous System and Sense Organs	10·7	7·3	7·6	0·68	4·22	4·90
390-458	Circulatory System	22·8	14·5	14·7	0·51	11·42	11·93
460-519	Respiratory System	7·9	5·9	6·1	1·35	7·29	8·64
520-577	Digestive System	7·8	7·1	7·2	0·20	7·85	8·05
580-629	Genito-Urinary System	7·1	5·1	5·2	0·24	6·49	6·73
630-678	Pregnancy and Childbirth	9·0	7·2	7·3	0·56	9·40	9·97
680-709	Skin and Subcutaneous Tissue	9·0	6·5	6·8	0·42	2·32	2·74
710-738	Musculoskeletal System	11·3	9·4	9·4	0·14	6·08	6·22
740-759	Congenital Anomalies	36·8	12·9	13·3	0·09	1·55	1·63
760-779	Perinatal Morbidity	22·7	11·3	12·5	0·07	0·29	0·36
780-796	Symptoms and Ill-defined Conditions	10·2	7·2	7·4	0·73	6·64	7·37
N800-N999	Accidents, Poisoning, Violence	7·6	7·1	7·1	0·92	9·91	10·83
Y00-Y89	Supplementary Classifications	5·9	3·6	3·6	0·17	3·38	3·55
	Total	9·7	7·6	7·8	8·00	92·00	100·00

APPENDIX 8
W.A. HOSPITALS 1976—RACE-SPECIFIC BED DAYS BY PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition Groups	Days in Hospital				Total
		Aboriginal		Non-Aboriginal		
		Number	% for Group	Number	% for Group	
000-136	Infective and Parasitic	26 748	35.2	49 210	64.8	75 958
140-239	Neoplasms	1 338	1.2	112 407	98.8	113 745
240-279	Endocrine, Nutritional, Metabolic	5 622	11.7	42 346	88.3	47 968
280-289	Blood and Blood Forming Organs	1 030	11.9	7 636	88.1	8 666
290-315	Mental Disorders	4 238	4.2	97 992	95.8	102 230
320-389	Nervous System and Sense Organs	13 978	14.0	86 069	86.0	100 047
390-458	Circulatory System	10 470	4.3	233 112	95.7	243 582
460-519	Respiratory System	27 507	15.6	148 861	84.4	176 368
520-577	Digestive System	4 076	2.5	160 174	97.5	164 250
580-629	Genito-Urinary System	4 838	3.5	132 493	96.5	137 331
630-678	Pregnancy and Childbirth	11 521	5.7	191 918	94.3	203 439
680-709	Skin and Subcutaneous Tissue	8 648	15.5	47 287	84.5	55 935
710-738	Musculoskeletal System	2 825	2.2	124 162	97.8	126 987
740-759	Congenital Anomalies	1 766	5.3	31 577	94.7	33 343
760-779	Perinatal Morbidity	1 432	19.2	6 011	80.8	7 443
780-796	Symptoms and Ill-defined Conditions	14 981	10.0	135 472	90.0	150 453
N800-N999	Accidents, Poisoning, Violence	18 812	8.5	202 212	91.5	221 024
Y00-Y89	Supplementary Classifications	3 566	4.9	69 002	95.1	72 568
	Total	163 396	8.0	1 877 941	92.0	2 041 337

NUTRITIONAL ANTHROPOMETRY

The reference standard used for comparison in the following Tables and Figures is the Harvard standard as given by Jelliffe in the Assessment of the Nutritional Status of the Community, W.H.O. Monograph Series No. 53, Geneva, 1966.

The normal range (mean \pm 2 standard deviations) expressed as a percentage of the standard mean approximates to 80–120 per cent for weight for age and weight for height and to 90–110 per cent for height for age.

In the reference population 50 per cent of the individuals have values for the above measurements which are greater than 100 per cent and less than 3 per cent have values which are below the normal range.

Tables 1 and 2 compare the percentage of children above 100 per cent of the standard, and below the normal range for various anthropometric measurements in 1975 and 1976.

Further results of this study will be published separately. Data is available from Community Health Services for interested research workers.

TABLE 1
PERCENTAGE OF CHILDREN AGED 0-5 YEARS ABOVE 100 PER CENT
OF THE HARVARD STANDARD

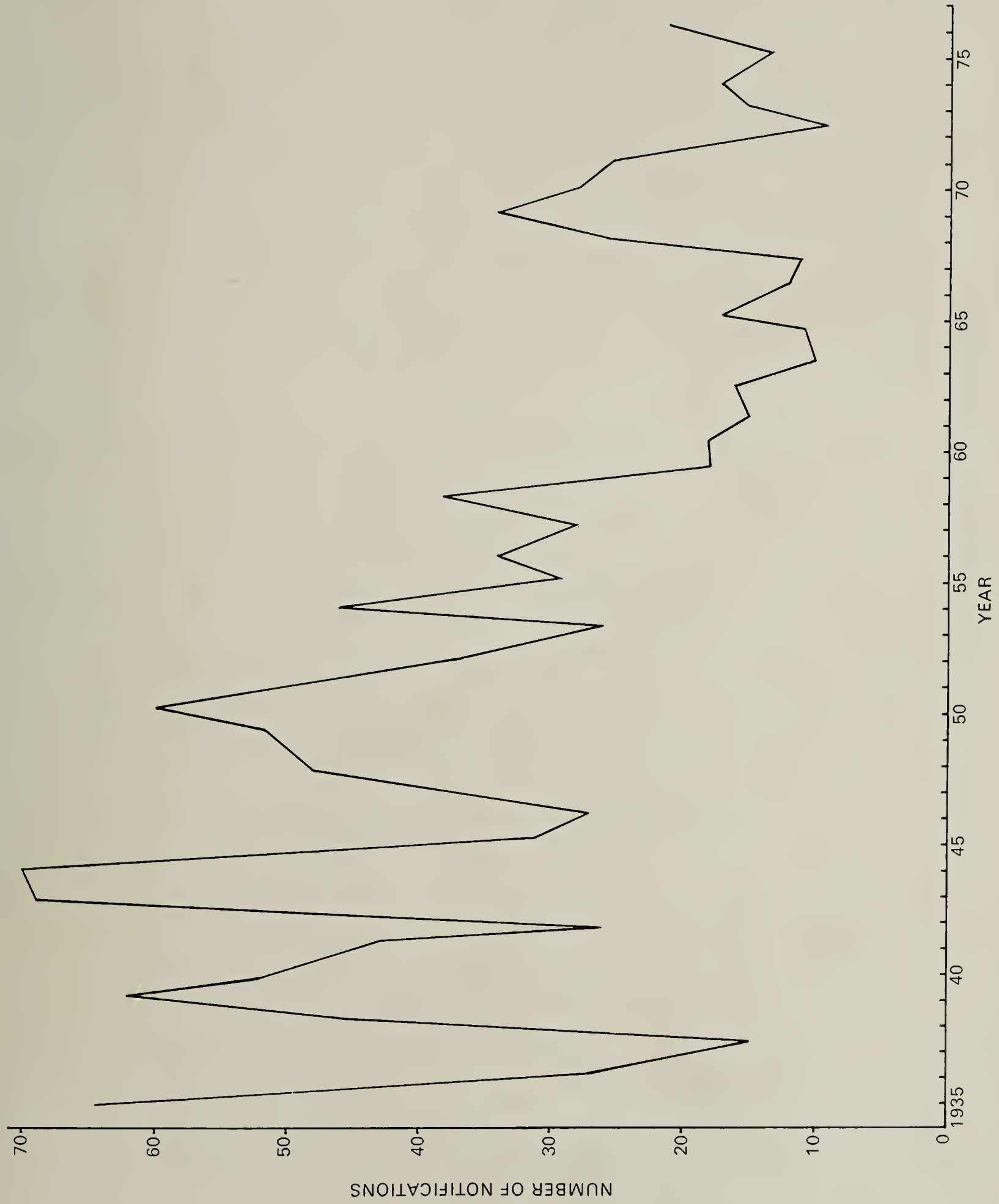
	Age Group (months)	1975	1976
Weight for Age	0-3	54	47
	4-6	45	47
	7-11	28	26
	12-60	18	18
	0-60	23	21
Height for Age	0-3	40	34
	4-6	37	33
	7-11	20	22
	12-60	7	7
	0-60	11	11
Weight for Height	0-3	42	46
	4-6	47	47
	7-11	45	42
	12-60	41	41
	0-60	42	41

TABLE 2
PERCENTAGE OF CHILDREN AGED 0-5 YEARS BELOW THE NORMAL
RANGE OF THE HARVARD STANDARD

	Age Group (months)	1975	1976
Weight for Age	0-3	14	13
	4-6	14	13
	7-11	18	21
	12-60	22	22
	0-60	20	21
Height for Age	0-3	11*	13*
	4-6	7	7
	7-11	12	12
	12-60	23	22
	0-60	20	20
Weight for Height	0-3	9	7
	4-6	7	7
	7-11	9	7
	12-60	5	5
	0-60	5	5

* Probably reflects the difficulty of fully extending very young infants.

APPENDIX 10
INFECTIONS DISEASE (HANSENS DISEASE) NOTIFICATIONS 1935-1976



APPENDIX 11
1935-1976 LEPROSARIUM INMATES AS AT 31st DECEMBER



APPENDIX 12
ABORIGINAL LEPROSY NOTIFICATION RATES* BY REGION 1971-1976

Area					Males					
					1971	1972	1973	1974	1975	1976
North	....	....	....	....	0·92	0·62	0·88	0·43	0·37	0·47
North West	....	....	....	....	0·94	0·87	0·54	0·50	0·37	0·47
North Central	....	....	....	....	....	....	0·44	0·44	....	....
East	....	....	....	....	....	....	0·74	....	....	....
Central	....	....	....	....	0·37	....	....	0·23	....	0·20
South	....	....	....	....	....	1·37	....	....	....	1·06
Total	....	....	....	....	0·48	0·46	0·34	0·26	0·29	0·29

Area					Females					
					1971	1972	1973	1974	1975	1976
North	....	....	....	....	0·30	0·59	0·47	....	....	0·51
North West	....	....	....	....	....	....	....	....	....	....
North Central	....	....	....	....	0·69	....	....	0·52	1·43	....
East	....	....	....	....	....	....	....	....	....	....
Central	....	....	....	....	0·41	....	0·25	....	....	0·19
South	....	....	....	....	2·85	....	....	0·63	....	0·52
Total	....	....	....	....	0·59	0·16	0·14	0·14	0·18	0·23

Area					Total					
					1971	1972	1973	1974	1975	1976
North	....	....	....	....	0·61	0·60	0·68	0·22	0·19	0·49
North West	....	....	....	....	0·51	0·47	0·26	0·26	0·98	....
North Central	....	....	....	....	0·31	....	0·24	0·47	0·66	....
East	....	....	....	....	....	....	0·34	....	....	....
Central	....	....	....	....	0·19	....	0·12	0·12	....	0·20
South	....	....	....	....	1·40	0·69	....	0·32	....	0·78
Total	....	....	....	....	0·53	0·31	0·24	0·20	0·24	0·26

* Per 1 000 Aboriginal persons.

APPENDIX 13
ABORIGINES NOTIFIED AS HAVING TUBERCULOSIS, 1971-1976*

Age Group (Years)					Male	Female	Total
0- 4	....	....	....	....	1	4	5
5- 9	....	....	....	....	....	....	....
10-14	....	....	....	....	....	....	....
15-19	....	....	....	....	....	1	1
20-24	....	....	....	....	1	4	5
25-29	....	....	....	....	3	3	6
30-34	....	....	....	....	1	1	2
35-39	....	....	....	....	3	....	3
40-44	....	....	....	....	3	....	3
45-49	....	....	....	....	4	1	5
50-54	....	....	....	....	2	2	4
55-59	....	....	....	....	3	....	3
60-64	....	....	....	....	5	2	7
65-69	....	....	....	....	1	1	2
70-74	....	....	....	....	1	....	1
75+	....	....	....	....	3	1	4
Total	....	....	....	....	31	20	51

* Supplied by Chest and Tuberculosis Services. Excludes Transfusion.
Includes all forms of T.B.

The incidence rate for Aborigines and migrants are about the same, but three times as much as for the Australian born Non-Aboriginal. (See Appendix 14.)

APPENDIX 14
RACE-SPECIFIC TUBERCULOSIS INCIDENCE BY BIRTH PLACE, W.A., 1971-1976

					Males					
					1971	1972	1973	1974	1975	1976
Non-Australian	....	....	....	....	0·38	0·48	0·31	0·37	0·29	0·20
Australian	....	....	....	....	0·08	0·12	0·11	0·09	0·13	0·08
Aboriginal	....	....	....	....	0·48	0·46	0·34	0·26	0·29	0·29

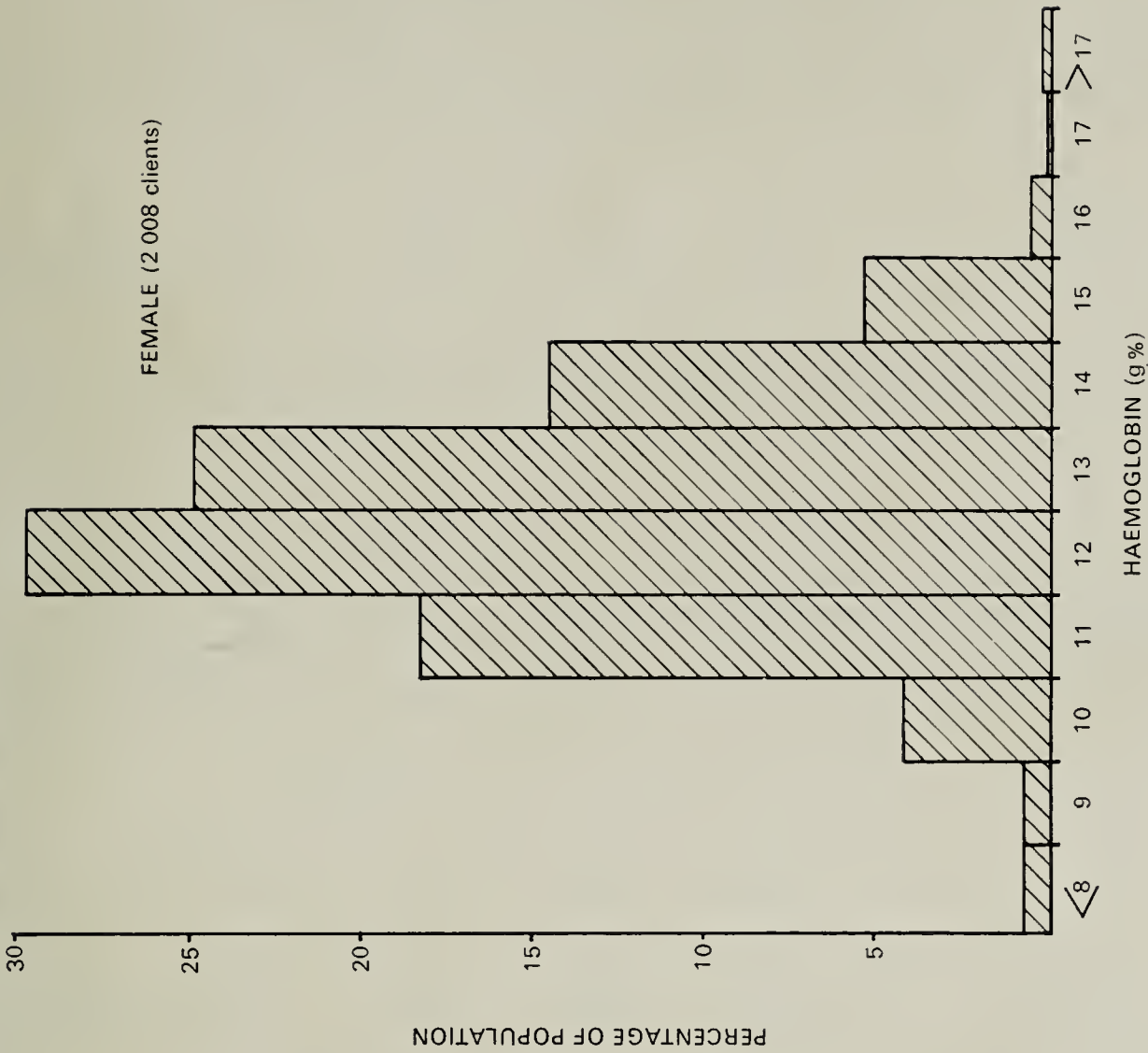
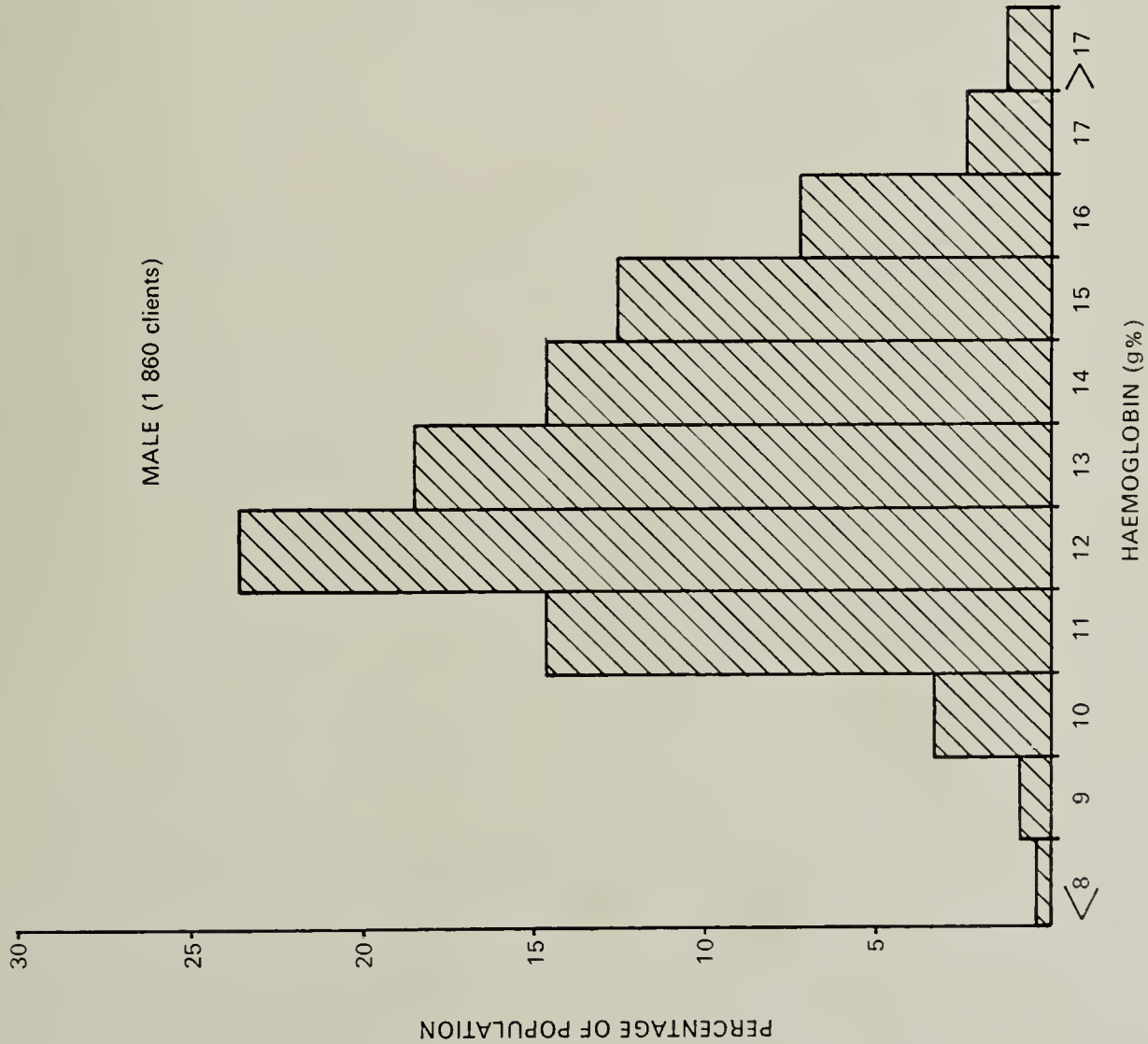
					Females					
					1971	1972	1973	1974	1975	1976
Non-Australian	....	....	....	....	0·37	0·21	0·18	0·16	0·20	0·22
Australian	....	....	....	....	0·04	0·05	0·07	0·06	0·05	0·03
Aboriginal	....	....	....	....	0·59	0·16	0·14	0·14	0·18	0·23

					Total					
					1971	1972	1973	1974	1975	1976
Non-Australian	....	....	....	....	0·26	0·30	0·25	0·28	0·25	0·21
Australian	....	....	....	....	0·06	0·09	0·09	0·07	0·08	0·06
Aboriginal	....	....	....	....	0·53	0·31	0·24	0·20	0·24	0·26

SEX-SPECIFIC TUBERCULOSIS NOTIFICATIONS BY REGION 1971-1976

Area					1971		1972		1973		1974		1975		1976		
					M	F	M	F	M	F	M	F	M	F	M	F	
North	....	....	....	....	3	1	2	2	2	1	1	....	1	....	2	2	17
North West	....	....	....	....	2	....	2	....	1	....	1	....	4	....	....	....	10
North Central	....	....	....	....	....	1	....	....	1	....	1	1	....	3	....	....	7
East	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1
Central	....	....	....	....	1	1	....	....	....	1	1	....	....	....	1	1	6
South	....	....	....	....	....	4	2	....	....	....	....	1	....	....	2	1	10
Total	....	....	....	....	6	7	6	2	5	2	4	2	5	3	5	4	51

APPENDIX 15
SEX—SPECIFIC HAEMOGLOBIN VALUES FOR 3 868 CLIENTS



All information is from computerised results of laboratory examinations carried out from Medical Audits throughout the State.

APPENDIX 16

EXTRACT FROM MEDICAL AUDIT STATISTICS

(Community Health Services)—3 186 persons audited

Ages			Males					
			16-18	19-40	41-60	>60	Unknown	Total
Heavy and Steady Drinkers	....	....	14	93	38	13	90	248
Total	....	....	142	258	80	34	365	879
Percentages (of total group)	....	....	9·86	36·05	47·50	38·23	24·66	28·21

Ages			Females					
			16-18	19-40	41-60	>60	Unknown	Total
Heavy and Steady Drinkers	....	....	8	47	19	6	69	149
Total	....	....	126	406	76	16	503	1 127
Percentages (of total group)	....	....	6·35	11·58	25	37·5	13·72	13·22

Ages			Total Group					
			16-18	19-40	41-60	>60	Unknown	Total
Heavy and Steady Drinkers	....	....	22	140	54	19	159	397
Total	....	....	268	664	156	50	868	2 006
Percentages (of total group)	....	....	8·2	21·08	36·54	38	18·32	19·79

CHILD HEALTH SECTION

1976 witnessed the amalgamation with Community Health Services, and this has been the most significant administrative event of the year.

There are already indications that areas of duplication have been eliminated and this tendency is expected to intensify as staff become accustomed to combining their skills, exercising team efforts and drawing upon the resources of the enlarged organisation.

ADMINISTRATION

Finance

Minimal new activities were undertaken during the year due to economic constraints. With careful management, the end of the 1976-77 financial year should result in a final surplus.

Regional Administration

The role of the Regional Officers has been changed to embrace responsibilities for additional public health duties including Child Health Services. In many areas freedom from administrative work is allowing other field staff to fulfil their proper functions and this development will continue.

VITAL STATISTICS

TABLE 1
WESTERN AUSTRALIAN STATISTICS 1976

Births	Perth Statistical Division	Rest of State	Whole State
LIVE BIRTHS—			
Number 	13 448	7 222	20 670
Rate per 1 000 population 	(a) 16·33	(a) 20·81	17·66
EX-NUPTIAL—			
Number 	1 342	1 279	2 621
Percentages (of live births) 	9·98	17·71	12·68
STILLBIRTHS (Born after 20 weeks gestation)—			
Number 	156	86	242
Rate per 1 000 total births 	11·47	11·77	11·57
Deaths	Perth Statistical Division	Rest of State	Whole State
INFANT DEATHS (aged under 1 year)—			
Number 	147	126	273
Rate per 1 000 live births 	10·93	17·45	13·21
NEO-NATAL DEATHS (aged under 28 days)—			
Number 	98	78	176
Rate per 1 000 live births 	7·29	10·80	8·51
PERINATAL DEATHS (Stillbirths and neo-natal deaths)—			
Number 	254	164	418
Rate per 1 000 total births 	18·67	22·44	19·99

(a) Preliminary.

TABLE 2
INFANT MORTALITY IN WESTERN AUSTRALIA 1971-1976

Year	Perth			Rest of State			Whole State		
	Live Births	Infant Deaths		Live Births	Infant Deaths		Live Births	Infant Deaths	
		Number	Rate		Number	Rate		Number	Rate
1971	15 843	269	17·0	8 396	195	23·2	24 239	464	19·1
1972	14 400	188	13·1	7 777	160	20·6	22 177	348	15·7
1973	13 307	213	16·01	7 203	181	25·13	20 510	394	19·21
1974	13 313	174	13·07	6 894	153	22·19	20 207	327	16·18
1975	13 406	150	11·19	6 932	121	17·46	20 338	271	13·32
1976	13 448	147	10·93	7 222	126	17·45	20 670	273	13·21

TABLE 3
NEO-NATAL DEATHS AS A PERCENTAGE OF TOTAL INFANT DEATHS
1971-1976

Year				Perth Statistical Division	Rest of State	Whole State
1971	....	....	....	69·0	61·5	65·6
1972	....	....	....	72·3	59·4	66·4
1973	....	....	....	73·23	59·66	67·00
1974	....	....	....	77·01	54·90	66·67
1975	....	....	....	72·00	64·46	68·63
1976	....	....	....	66·67	61·90	64·47

TABLE 4
INFANT MORTALITY RATES FOR LOWEST 25 COUNTRIES WITH
POPULATIONS OVER 2 500 000

Country				1973	1974	1975
Sweden	....	....	....	9·6	9·2	8·3
Finland	....	....	....	10·0	10·2	
Japan	....	....	....	11·3	10·8	
Netherlands	....	....	....	11·5	11·2	10·3
Denmark	....	....	....	11·5	10·7	
Norway	....	....	....	11·9	10·5*	
Switzerland	....	....	....	13·2	12·5	10·7
France	....	....	....	15·4	14·4	13·6*
Canada	....	....	....	15·5		
German Democratic Republic	....	....	....	15·6	15·9*	15·7
New Zealand	....	....	....	16·2	15·5	16·0
Hong Kong	....	....	....	16·4	17·7*	
Australia	....	....	....	16·5	16·1	14·3
England and Wales	....	....	....	16·9	16·3	16·3
Belgium	....	....	....	17·0	16·2*	
United States	....	....	....	17·6	16·7	16·1
Ireland	....	....	....	18·0	17·0	
Czechoslovakia	....	....	....	21·2	20·4*	20·9*
Spain	....	....	....	21·5	19·6*	
German Federal Republic	....	....	....	22·7	21·1	19·7
Israel	....	....	....	22·8	23·5	21·8
Austria	....	....	....	23·8	23·4*	20·5
Greece	....	....	....	24·1	24·0	
Italy	....	....	....	25·7	22·6	20·7*
Poland	....	....	....	26·1	23·7*	25·0*

* Provisional data.

TABLE 5

STILLBIRTH AND INFANT MORTALITY RATES (a) (b)—AUSTRALIA AND NEW ZEALAND

Area of Registration	Total Births Including Stillbirths (c)	Stillbirth Rates (c)	Infant Mortality Rates				Total Mortality Infant Deaths and Stillbirths
			Under one week	Under one month	One month and under one year	Total under one year	
1975— New Zealand	57 111	8.3	8.3	9.6	6.2	15.8	24.1
1976— Western Australia	20 912	11.6	7.2	8.4	4.6	13.1	24.6
New South Wales	79 326	10.5	9.5	10.6	3.9	14.5	25.0
Victoria	61 283	10.1	6.9	8.3	3.1	11.5	21.5
Queensland	35 546	8.5	10.0	11.4	3.6	15.1	23.6
Tasmania	6 803	14.8	5.6	6.2	5.1	11.3	26.2
South Australia	19 157	11.0	8.7	10.0	4.4	14.4	25.4

(a) Rates calculated per 1 000 total births, including stillbirths.
(b) Infant mortality refers to deaths which occur from birth to one year of age.
(c) The term “stillbirth” refers to a child, not born alive, of at least 20 weeks gestation, or at least 400 grammes weight for all Australian States and of at least 28 weeks gestation for New Zealand.

TABLE 6

WORK DONE IN CHILD HEALTH CLINICS 1972-1976

	1972	1973	1974	1975	1976
Birth Notifications Received	19 184	18 034	18 345	18 744	19 313
Births Registered	22 177	20 780	20 481	20 574	20 670
Total Attendances	273 226	254 545	245 631	263 163	274 535
Individuals Attending—					
Under 1 year	24 785	24 746	23 529	24 526	24 581
1–2 years	11 088	11 512	10 964	11 898	11 550
Over 2 years	7 293	7 537	8 636	9 935	10 109
Total	43 166	43 795	43 129	46 359	46 240
Home Visits	33 343	32 598	34 386	37 641	40 100
Telephone Consultations	28 984	29 444	32 463	36 901	41 463
Hospital Visits	18 909	18 013	16 651	19 190	19 203
Urine Tests	17 919	16 830	16 561	22 036	17 119
Number of Expectant Parent Classes	533	710	636	358	682

It will be noted:—

- (1) The number of live births in Western Australia has levelled off around 20 000 after a peak of 24 537 in 1971.
- (2) The infant mortality rate continues to fall world-wide. Australia is gradually improving its position on the world scale, in 1975 lying tenth (as compared with thirteenth in 1973).
- (3) Western Australian infant mortality figures have again been low in 1976, but are still greater than those of New South Wales and Victoria.
- (4) The infant mortality rate in rural areas is still a cause for concern, reflecting the problems of long distance, isolation from sophisticated medical facilities and aboriginal health care. The figure for Perth Metropolitan (10.93) is excellent and compares very favourably with world standards.
- (5) The attendance figures at Child Health Centres has risen as compared with last year. This increase is mainly due to increased numbers in the 1–5 year old age group.

NURSING STAFF

Amalgamation with Community Health Services has preserved the role functions of Child Health Nursing staff and improved liaison at all levels has been observed.

There were six new appointments during the year raising the staff complement to 130. Only two centres, Norseman and Port Hedland, have proved difficult to fill because of the unavailability of suitable accommodation.

NEW CENTRES

In country areas, Tarcoola (Geraldton) Paraburdoo and Albany opened new centres, while Ferndale, Shenton Park, Kardinya and Belmont were added to the metropolitan list of centres.

CORRESPONDENCE SECTION

“Tea and Sugar Train” health services along the Trans-Australian Railway Line have been increased to provide monthly visits, and the improved regular service has been well received.

A schedule of country trips was carried out, giving head office staff an opportunity to visit parents and children and to exchange views with colleagues in remoter areas.

The customary high output of information to parents in all walks of life continued throughout the year without signs of abatement.

Birth Notifications Received	....	....	....	....	808
New Babies (figures included from May only)	....	....	....	....	359
Requests (received by letters from parents)	....	....	....	....	1 379
1st Contact (equivalent to first home visit)	....	....	....	....	1 522
2nd Contact (equivalent to follow-up visit)	....	....	....	....	3 058
Telephone	....	....	....	....	3 208

Attendances					Total	Individual
Under 1 year	....	....	....	....	2 698	714
1-2 years	....	....	....	....	867	275
2-6 years	....	....	....	....	1 693	869
0-6 years	....	....	....	....	828	
Adults	....	....	....	....	322	
Expectant Mothers	....	....	....	....	90	

RESOURCES SECTION

A new Parenthood Course, developed by the Section early in the year, was released at the commencement of the first school term. Six thousand printed lessons have been distributed.

School teachers have taken part in intensive courses dealing with the relay of “parenting” information to students.

City Schools involved in the Parenthood courses are:—

Applecross (Year 9 students)	Melville (Year 9 students)
Balga	North Lake
Bentley	Perth Modern
Carine	South Fremantle
City Beach	St. Joachims
Christ Church	Thornlie
Kewdale	Tuart Hill

Considerable attention has also been given to growth and development and contraception through lectures, films and visits by Section staff to centres in the South-West, Pilbara and Kimberley.

Talks have been held with Parents and Citizens Groups and various metropolitan hospitals with emotionally disturbed patients participating in low key discussions.

Television and radio appearances were made by two members of the staff.

SCHOOL HEALTH SECTION

The overall aims of this Section remain the same as previously, except that recent amalgamation is expected to bring preventive health services to the population in a much more efficient and co-ordinated manner.

(1) Health Education

With parents, pre-school institutions and students in primary and secondary schools and training institutions for teachers.

(2) Primary Care and Counselling

A responsibility carried out mainly by school based nurses working in primary and secondary schools.

(3) Screening and Assessment

Programmes directed mainly at the target Year 1 group in primary schools as well as all children in pre-schools.

STAFF

While there was little change in the professional establishment, there was a considerable increase in the nursing establishment due to continued expansion of the Education Department-funded School-based Nurse Programme, as well as an expansion in the number of Public Health Department-funded School Health Nurses employed in a number of country schools.

Three additional nurses were also appointed to cover independent schools.

A continuous presence in rural areas is proving to be of much more value than the “annual visits” made to many areas in the past.

Tables 7 and 8 below show the total number of Institutions in the State to be covered and the number actually visited by the staff during 1976:

TABLE 7
NUMBER OF INSTITUTIONS 1976

	Metropolitan	Country	Total
Child Care	78 day care 13 occasional care 122 family care	12 day care 2 occasional care 14 family care	90 day care 15 occasional care 136 family care
Kindergartens (Pre-School Board)	146	164	310
Government Schools (Primary)	239	231	470
Government Schools (Secondary)	44	25	69
Government Schools (District High)	....	52	52
Catholic Education Commission Schools (Primary)	62	37	99
Catholic Education Commission Schools (Secondary)	17	9	26
Catholic Education Commission Schools (Primary and Secondary)	14	10	24
Independent Schools	30	8	38
Total			1 329

TABLE 8
INSTITUTIONS VISITED IN 1976

	Metropolitan	Country	Total
Child Care Centres	75	5	80
Family and Occasional Care Centres	135	16	151
Kindergartens (Pre-School Board)	146	115	261
Primary Schools (Government and Non-Government)	352	242	594
Secondary Schools (Government and Non-Government)	59	21	80
Total			1 166

It can be seen that 1 166 out of a possible 1 329 Institutions were visited during 1976. This reflects a big improvement in the cover given to country schools, but however does not include schools in the Pilbara and Kimberley Regions.

The total number of enrolments in 1976 is shown in Table 9 below:—

TABLE 9
ENROLMENTS 1976

Child Care Centres	....	....	....	....	3 612
Kindergartens (Pre-School Board)	....	....	....	....	16 161
Government Primary	....	....	....	133 342	203 898
Government Secondary	....	....	....	64 735	
Special Schools	....	....	....	1 480	
Non-Government Primary	....	....	....	24 678	44 393
Non-Government Secondary	....	....	....	19 715	
Total					268 064
School Entry Target Population (Year 1)					24 816

The total number of pre-school and school children examined by School Health staff during 1976 are shown in Tables 10 and 11.

TABLE 10
NUMBER OF PRE-SCHOOL CHILDREN EXAMINED BY SCHOOL HEALTH STAFF 1976

	Metropolitan	Country	Whole State
Full Health Appraisal (Including screening tests and physical examination)	10 527	3 596	14 123
Vision Tests	11 630	4 320	15 950
Hearing Tests	11 482	4 314	15 796

TABLE 11
NUMBER OF SCHOOL CHILDREN EXAMINED BY SCHOOL HEALTH STAFF 1976

	Metropolitan	Country	Whole State
Full Health Appraisal (Including screening tests and physical examination)	18 470	4 073	22 543
Vision Tests	83 222	23 839	107 061
Hearing Tests	51 022	18 415	69 437

Year 1 school entry population was covered very well during 1976 as 22 543 children had a full health appraisal out of a total of 24 816. In addition, 14 123 children attending pre-school institutions were also fully examined.

Some children attending Day Care and Occasional Care Centres cannot be examined because of the rapid turnover of these children.

DISTRICT HEALTH TEAMS

During 1976 six District Health teams were located in decentralised District Offices as follows:—

Child Health Services Centres—

Koondoola
Southwell
Queens Park

School Services Centres—

Hollywood
Innaloo
Midland

The biggest single category referred to the centres are speech problems, but others include nutrition, neglect and rejection, enuresis, social and behavioural problems, school underachievement, and mental retardation.

While the Schools Services Centres interdisciplinary efforts are limited by a shortage of speech pathologists and social workers, considerable progress has been made in establishing liaison with the Guidance and Special Education Branch of the Education Department.

SCHOOL-BASED NURSES (Secondary School Programme)

The attachment of nurses to the staff of secondary schools and a group of contributory primary schools expanded considerably in 1976. During 1976, nurses were attached to the staffs of the following senior high schools:—

Albany S.H.S.	John Curtin S.H.S.
Balga S.H.S.	Kelmscott S.H.S.
Belmont S.H.S.	Kewdale S.H.S.
Bentley S.H.S.	Kwinana S.H.S.
Bunbury S.H.S.	Lockridge S.H.S.
Carine S.H.S.	Mt. Lawley S.H.S.
Collie S.H.S.	Northam S.H.S.
Geraldton S.H.S.	Perth Modern S.H.S.
Governor Stirling S.H.S.	Rockingham S.H.S.
Girrawheen S.H.S.	Rossmoyne S.H.S.
Hampton S.H.S.	Tuart Hill S.H.S.
Hollywood S.H.S.	

Activities of Nurses in Secondary Schools 1976

Health Appraisals	....	....	....	....	....	3 800
Vision Tests	....	....	....	....	....	25 789
Hearing Tests	....	....	....	....	....	7 910
Student Contacts—(Counselling, First Aid)	....	....	....	....	....	58 694
Home Visits	....	....	....	....	....	1 668
Staff Contacts—(Health, First Aid)	....	....	....	....	....	1 827

Health Education Programmes—

Primary Schools (Classes)	....	....	....	....	....	77
Year 8 (Classes)	....	....	....	....	....	675
Year 9 (Classes)	....	....	....	....	....	496
Year 10 (Classes)	....	....	....	....	....	420
Year 11 (Classes)	....	....	....	....	....	106
Year 12 (Classes)	....	....	....	....	....	59
Inservice Courses for Teachers	....	....	....	....	....	14
Home Nursing and First Aid (Classes)	....	....	....	....	....	131
Weight Watchers Groups	....	....	....	....	....	80

SPECIAL PROGRAMME FOR HANDICAPPED CHILDREN—HOLLYWOOD SENIOR HIGH SCHOOL

A School Health Nurse was included in the number of nurses appointed under the Secondary School Programme in order to initiate the integration of physically handicapped children from the Crippled Children’s Society (Yaringa School) into a normal secondary school programme.

Two aides were also appointed and a special bus was provided with facilities for wheel chairs. Modifications were made to toilets and corridors at the school, and special ramps were installed. The entire project has been funded by the special Innovative Grants of the Schools Commission.

No. of handicapped children from Crippled Children’s Society (Yaringa School)	....	....	....	....	....	....	19
No. from Sir James Mitchell Spastic Centre	....	....	....	....	....	....	1
Walking Cases	....	....	....	....	....	....	4
Wheelchair Cases	....	....	....	....	....	....	16

Causes of Disabilities—

Cerebral Palsy	....	....	....	....	....	....	....	1
Muscular Dystrophy	....	....	....	....	....	....	....	9
Spinal Muscular Atrophy	....	....	....	....	....	....	....	3
Amelia	....	....	....	....	....	....	....	1
Turner's Syndrome	....	....	....	....	....	....	....	1
Dwarfism	....	....	....	....	....	....	....	1
Poliomyelitis	....	....	....	....	....	....	....	1
Osteogenesis Imperfecta	....	....	....	....	....	....	....	2
Polystatic Fibrous Dysplasia	....	....	....	....	....	....	....	1
Total	....	....	....	....	....	....	....	20

In general the students were accepted very well and remarkably quickly by the Hollywood students. Help required involved pushing manual wheelchairs or escorting electric wheelchairs to the next destination and assisting with lunches. Eight students withdrew from the programme in 1976 and reasons for these were as follows:—

Deceased	....	....	....	....	....	....	....	1
Age difference—several years older than students in their class	....	....	....	....	....	....	....	2
Sheltered workshop Shenton Park transfer	....	....	....	....	....	....	....	1
Business College transfer	....	....	....	....	....	....	....	1
Occupation Therapy Department—Lucy Creeth Centre Transfer	....	....	....	....	....	....	....	1
Poor general health	....	....	....	....	....	....	....	1
Inability to tolerate discipline	....	....	....	....	....	....	....	1

DISADVANTAGED SCHOOLS PROGRAMME

Six nurses are still based in Disadvantaged Schools as follows:—

Hilton Park Primary School
 South Fremantle Senior High School
 Highgate Primary School
 Midvale Primary School
 Hamilton Hill Senior High School

Activities of Nurses in Disadvantaged Schools

Health Appraisals	....	....	....	....	....	....	....	1 062
Vision Tests	....	....	....	....	....	....	....	4 711
Hearing Tests	....	....	....	....	....	....	....	3 455
Student Contacts (Counselling, First Aid)	....	....	....	....	....	....	....	8 253
Home Visits	....	....	....	....	....	....	....	1 189
Staff Contacts (Health, First Aid)	....	....	....	....	....	....	....	2 868

Health Education Programmes—

Primary Schools (Classes)	....	....	....	....	....	....	....	293
Year 8 (Classes)	....	....	....	....	....	....	....	68
Year 9 (Classes)	....	....	....	....	....	....	....	18
Year 10 (Classes)	....	....	....	....	....	....	....	99
Year 11 (Classes)	....	....	....	....	....	....	....	69
Inservice Courses for Teachers	....	....	....	....	....	....	....	19
Home Nursing and First Aid (Classes)	....	....	....	....	....	....	....	213
Weight Watchers Groups	....	....	....	....	....	....	....	31

Enrolment at Metropolitan Disadvantaged Schools—

Primary	....	....	....	....	....	....	....	5 904
Secondary	....	....	....	....	....	....	....	2 304
Total	....	....	....	....	....	....	....	8 208

An analysis has been done on the figures obtained on the Health Screening Programme in Disadvantaged Schools, and this will be discussed in more detail when the total figures for the screening programme are analysed. In summary, there was a much higher incidence of unsuspected visual defects (112), speech problems (80) and nutritional problems than one would expect in a school population of that size.

PRE-SCHOOL HEALTH TEAM

During 1976 the Pre-School Health Team achieved its target of visiting all Day Care and Family Care Centres in the Metropolitan Area. The full target population were screened and examined with the co-operation of Child Health Nurses and the Medical Officers. A referral rate of 1 in 7 to other members of the team by the nurses resulted.

TABLE 12
PRE-SCHOOL HEALTH TEAM—ACTIVITIES 1976

Full Health Appraisals	....	....	....	....	3 612
Referred to Medical Officer	....	....	....	....	524
Referrals to Speech Pathologist	....	....	....	....	61
Referrals to Social Worker	....	....	....	....	Not available

As the position of Social Worker was vacant for most of the year, there are no relevant figures for this area. It is hoped in 1977 that this role will be more established. Reasons for Referral were:—

- (1) Speech problems
- (2) Problems of intellectual and social development
- (3) Physical causes of all types, e.g. obesity, undernutrition, orthopaedic problems, heart murmurs, etc.
- (4) Behaviour problems
- (5) Squints and hearing loss
- (6) Visual defects and co-ordination difficulties.

Because of the difficulties encountered in covering the target area, the work of the Pre-School Health Team will be confined to children attending Day Care and Family Care Centres in 1977, and the Kindergartens and disadvantaged areas will be returned to the school districts.

Screening must be followed by management; must provide basic information; must be self-critical and open to change; and must promote primary prevention and family participation. All problems identified were either referred to family practitioners, specialists, public hospitals or managed by the Medical Officers themselves as members of a multi-disciplinary team.

TABLE 13
TOTAL NUMBER OF HEALTH APPRAISALS—NURSES

Total Number of Full Health Appraisals by Nurses	....	36 666
Total Number of Vision Tests	....	123 011
Total Number of Hearing Tests	....	85 233
Referred for Full Assessment of Visual Handicap to Family Doctor	....	1 922
Referred for Assessment by Medical Officer (School Health)	....	12 842
Referred for Home Attention by Parents—(Hygiene, Nutrition, Infestations)	....	4 273
Referred for Dental Attention	....	3 730
Identified as having Colour Vision Defect	....	574

Table 13 refers to the total number of examinations carried out by the School Health Section in 1976 in both the pre-school and school-aged children.

TABLE 14
EXAMINATIONS BY MEDICAL OFFICERS 1976

SOURCE OF REFERRAL—						
School Health and Child Health Nurses	....	....	....	....	....	12 842
Teachers	....	....	....	....	....	4 545
Parents	....	....	....	....	....	315
Guidance Branch	....	....	....	....	....	286
Other	....	....	....	....	....	55
Total	....	....	....	....	....	18 043

The number of children referred to Medical Officers has increased by approximately 5 000 since 1975, although the number of Medical Officers has not increased, except for Dr. Pearson working part-time in the Bunbury Region. The difference in these figures reflects the fact that the Medical Officers are now visiting country schools much more regularly and a very much increased number of country children have been referred to them by the nurses based in country districts.

TABLE 15
ASSESSMENTS AND REFERRALS BY MEDICAL OFFICERS

Total Number of Children Examined	....	....	....	....	....	18 043
Assessed Jointly with Guidance Branch	....	....	....	....	....	399
REFERRED TO—						
Family Doctor	....	....	....	....	....	4 201
Assessment Centre	....	....	....	....	....	36
Child Health Services Centre	....	....	....	....	....	405
Guidance Branch	....	....	....	....	....	236
Irrabeena	....	....	....	....	....	19
Speech Therapy Services	....	....	....	....	....	688
Princess Margaret Hospital	....	....	....	....	....	364
Fremantle Hospital	....	....	....	....	....	65
Other Hospitals	....	....	....	....	....	61
Private Specialists	....	....	....	....	....	239
National Acoustic Laboratory	....	....	....	....	....	96
Community Health Section	....	....	....	....	....	7
Mental Health Services	....	....	....	....	....	10

As in previous years, the vast majority of the children referred had been referred to the family doctor, but medical officers have considerable discretion in selecting the appropriate referral agency or making the decision to manage the child themselves.

TABLE 16
CLASSIFICATION OF CONFIRMED DISABILITIES
AND HANDICAPS BY SYSTEMS 1976

VISUAL HANDICAP (Total)	....	....	....	....	....	1 500
Refractive Errors	....	....	....	....	....	1 073
Strabismus	....	....	....	....	....	301
Spectacles Prescribed	....	....	....	....	....	1 033
Surgery	....	....	....	....	....	34

TABLE 16—cont.

HEARING HANDICAP (Total)	....	....	....	....	880
Sensorineural Deafness	....	....	....	....	239
Secretory Otitis Media	....	....	....	....	272
Chronic Suppurative Otitis Media	....	....	....	....	187
Perforations (Chronic)	....	....	....	....	182
Hearing Aids Supplied	....	....	....	....	5
Surgery	....	....	....	....	138
CARDIOVASCULAR SYSTEM (Total)	....	....	....	....	33
Congenital Heart Disease	....	....	....	....	29
Atrial Septal Defect	....	....	....	....	4
Ventricular Septal Defect	....	....	....	....	14
Aortic Stenosis	....	....	....	....	1
Pulmonary Stenosis	....	....	....	....	3
Patent Ductus Arteriosus	....	....	....	....	5
Coarctation of the Aorta	....	....	....	....	1
Rheumatic Heart Disease	....	....	....	....	4
MUSCULOSKELETAL SYSTEM (Total)	....	....	....	....	86
Disorders of Growth and Nutrition	....	....	....	....	159
Obesity	....	....	....	....	98
GENITO-URINARY SYSTEM (Total)	....	....	....	....	195
Undescended Testes	....	....	....	....	123
CENTRAL NERVOUS SYSTEM (Total)	....	....	....	....	68
PSYCHOSOCIAL AND DEVELOPMENTAL DIS- ORDERS (Total)	....	....	....	....	399
Speech Disorders	....	....	....	....	688
Managed within Community and Child Health Ser- vices	....	....	....	....	405
Total	....	....	....	....	4 320

This is a considerable increase over 1975, when a total number of 2 730 handicapped children were identified. This again reflects the much more efficient cover of country pre-school and school children and a very considerable increase in the number of psychosocial and developmental disorders and increased facilities being available in the community for their management.

TABLE 17
EASTERN GOLDFIELDS REGION

VISUAL HANDICAP (Total)	....	....	....	....	158
Refractive Errors	....	....	....	....	36
Infections	....	....	....	....	11
Trachoma	....	....	....	....	106
Glasses Prescribed	....	....	....	....	11
HEARING HANDICAP (Total)	....	....	....	....	248
Sensorineural Loss	....	....	....	....	73
Secretory Otitis Media	....	....	....	....	20
Chronic Suppurative Otitis Media	....	....	....	....	73
Perforations (Chronic)	....	....	....	....	78

During 1976 a combined School Health/Community Health/Child Health screening visit was made to the central desert and North-East Goldfields Regions, accompanied by the Regional Medical Officer for the Goldfields, Dr. S. Chowrryappah. During this visit a very large number of children were identified as suffering from Trachoma and chronic ear infections. As a result of their report, specialist visits are being arranged by the Director of Community and Child Health Services. These figures correlate also with the high infant mortality in the Eastern Goldfields Region and it is expected that there will also be a much higher childhood morbidity in the area. This obviously needs further study.

SPECIAL ASSIGNMENTS

A Child Health Services Medical Officer conducts a weekly session at the Chidley Point Educational Centre.

A survey was carried out by Dr. L. Callingham to discover the incidence of hearing loss in the Hollywood District.

Dr. Judith Henzell presented a paper on "The Expanded Role of the School Health Nurse in Paediatric Screening" at the Australian Paediatric Association Conference in Canberra during April.

ASSESSMENT CENTRE

There has been a steady increase of referrals since the assessment service commenced in 1974, and some 270 new referrals were seen during 1976. In the six months period from July through to December, 1976 there were 1 141 children attending the Centre, making an average of 9·3 attendances per day.

The main source of referral has been from within the Community and Child Health Services (57 per cent), with 12 per cent of referrals inside the Service coming from the Education Department, 7·5 per cent from family practitioners and 6 per cent from the Department for Community Welfare.

Seventy five per cent of children seen were in the pre-school group, the majority of these being in the 0-3 year old bracket. Major problems referred, in order, were:—

- (1) Behavioural and emotional disorders.
- (2) Intellectual delay.
- (3) Language delay.

These three problems account for nearly 70 per cent of the referrals.

A purpose-built building is, at present, under construction and is scheduled for completion by September, 1977. This facility will aid clinical work because of its improved observation and play areas, as well as its improved facilities for educational programmes which are due to commence during 1977. The project has been funded for some additional staff which includes a position for a paediatric registrar in advanced training.

Social work students and speech pathology students are also attending the Centre as part of their training programmes, and it is hoped to commence a 4-6 week course in Developmental Paediatrics for Community and Child Health doctors in 1977.

In the latter part of 1976, Dr. Parry, Developmental Paediatrician of the Assessment Centre, undertook a three month Fellowship under the auspices of the World Health Organisation. This was to study post-graduate training in developmental and community paediatrics as well as to enquire as to the functioning of assessment centres in other parts of the world and management programmes for parent/child relationship problems. The information gained during the study tour will greatly enrich the functioning of the Child Development Centre.

CONCLUSION

The activities of Community and Child Health Services are many and diverse. Appreciation must be expressed to all the staff for untiring efforts in restrictive circumstances. Much needs to be done in effecting a smoothly functioning amalgamated Branch but I believe that we are pointing in the right direction.

Appendix VI

Community Health Programme

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The Community Health Programme has undergone a process of consolidation and review during 1976. The Programme was introduced by the Commonwealth and supported by the States in July, 1973 on the basis that it would be reviewed after an initial three year period. An intensive period of review was undertaken in the year ending June 1976, with the Commonwealth working in close co-operation with the States. The Hospitals and Health Services Commission produced a report "Review of the Community Health Programme" in March 1976, and the summary of recommendations is shown as Attachment (1). The recommendations covered a wide range of considerations, but the most important were those that provided for:—

1. The continuation of the Programme.
2. The impetus towards the introduction of a "block grant" system of financial arrangements.
3. The move towards devolution of responsibility for administrative detail, from Commonwealth to State.
4. That legislation should be introduced authorising the Commonwealth to enter into formal agreements with those States and organisations receiving Community Health Programme grants.

The acceptance of these recommendations was underscored in a letter sent to the Premier by the Prime Minister in March 1976, proposing a major devolution of administrative responsibility and suggesting that current approvals be regarded as a "block grant" with immediate effect.

Inherent in the devolution arrangements was the formation of a joint Commonwealth/State Community Health Committee, to meet bi-annually.

The first Joint Works (Community Health Programme) Meeting was held on 1st June, 1976 and several procedural matters were agreed. Funding of ongoing projects was discussed in detail, but the Commonwealth Officers confirmed earlier informal advice that no funds would be available in 1976/77 for any of the 31 new projects which had been developed within the State's Community Health Programme Secretariat during the preceding six month period.

The Commonwealth/State Standing Committee met again on 24th November, 1976 and discussions were held in the following areas:—

1. Commonwealth/State Administrative Arrangements.
2. Progress Review of Programme.
3. Specific Policy Issues.
4. Foreshadowed 1977/78 Programme.
5. National Organisations.
6. Other Business.

PROJECTS WHOLLY OR PARTIALLY FUNDED THROUGH THE COMMONWEALTH COMMUNITY HEALTH PROGRAMME

PROJECTS ADMINISTERED BY MENTAL HEALTH SERVICES

Community Psychiatric Services

The Division of Community Psychiatric Services was established in 1974 and the primary aim is the selection of hostels for rehabilitation of selected patients, and for activation and socialisation. These hostels are located throughout the metropolitan area and although a number of the residents do attend the Industrial Rehabilitation

Unit, a significant group are unable to participate in that form of rehabilitation. The hostels selected by Community Psychiatric Services meet the needs of this latter group. The Division is now well established and is attempting to provide active social programmes.

Domiciliary Service

The Domiciliary Service unit was established with the objective of helping parents within their own homes to train the handicapped child in independence. After an initial pilot programme proved successful, funds were provided in 1975/76 by the Community Health Programme to expand the service and funding has continued in 1976/77. Apart from the obvious advantages of home training involving the family as an entity, there are secondary benefits by reducing the demands for Departmental residential accommodation.

Clinical Engineering

Special items of equipment are manufactured within the Department by the Clinical Engineering Unit and issued on loan for use by intellectually and profoundly handicapped residents in the community. It is proposed to extend this service to all Mental Health Services Units. The unit is funded by the Community Health Programme.

Country Clinical Teams

Many intellectually handicapped persons are living in country areas and towns throughout the State. It is often not possible or practical for parents to take advantage of the comprehensive services available in the Metropolitan area. Multi-disciplinary teams from the Irrabeena Centre (designated Country Clinical Teams and funded by the Community Health Programme) visit most areas of the State to conduct assessment sessions and organise training programmes at a local level. Many such centres have an active Branch of the Slow Learning Children's Group who operate day activity centres and hostels.

Irrabeena Clinic

The Community Health Programme provided financial assistance to cover the appointment of seven additional staff members to the Irrabeena Clinic. Irrabeena is the principal diagnostic and assessment centre for mentally retarded persons in Western Australia. This Clinic works in close liaison with Princess Margaret Hospital for Children, King Edward Hospital for Women, University of Western Australia, other Tertiary Education Institutions and Community and Child Health Services. It is a non-residential unit providing a specialised service.

Pyrton Day Activity Centre

There is a constant demand for day centre facilities for the intellectually handicapped. Many of these centres are operated by the Slow Learning Children's Group. The Centre at Pyrton was established as part of the Mental Deficiency Division's contribution towards meeting this demand. Funds were provided from the Community Health Programme to cover the appointment of two additional Social Trainers. The Centre has day facilities for 35 children who live at home and who attend on a daily basis, Monday to Friday.

Community Development Centre

The Community Development Centre is the unit of Mental Health Services which provides mental health education services. The facilities are available to all approved organisations who are active in health education and other related fields of community service. The Centre conducts special courses in human relationships, provides forums for discussions on social problems affecting the health and quality of life of the community in general. The Community Health Programme has contributed \$18 441 to permit expansion of the service.

Out-Patient—Clinics: Havelock, Fremantle, Bentley, Armadale and Swan

Mental Health Services established its first Out-Patient Clinic (Havelock) outside the hospital environment in 1956. This type of service has been well received and has resulted in considerable expansion, particularly in the past five years. New Clinics have been constructed in Fremantle, Bentley, Armadale and Swan, and the activities conducted from the clinics readily met the principles which are the basis of the Community Health Programme. Community Health Programme funds were allocated for capital works and operating costs at the Clinics mentioned above on the following basis:—

Armadale Clinic	....	....	Capital and Full operating costs
Swan Clinic	....	....	Capital and Full operating costs
Havelock Clinic	....	....	Part operating costs only
Fremantle Clinic	....	....	Part operating costs only
Bentley Clinic	....	....	Part operating costs only

Each Clinic is staffed by specialist psychiatrists, clinical psychologists, occupational therapists, social workers and support welfare staff. Day and evening sessions are available and facilities exist for child minding services.

Graduate Welfare Officers—Graduate Assistant: Mental Deficiency Division

The salaries of three staff were funded under the Community Health Programme in 1976/77. Graduate Welfare Officers assisted Social Workers in assessment centres, other units and in community activities. They contributed towards meeting some of the deficiencies arising from the non availability of qualified social workers. The Graduate Assistant is responsible for supervision of the Division's Statistical Section, which is involved in providing data to assist future planning of services for the mentally retarded in Western Australia.

Brighton Hostel and Hove Day Centre

The programme for the care and training of the intellectually handicapped places considerable emphasis on independence training leading towards eventual placement of these persons in a normal residential environment. Part of the project requires an increasing provision of residential hostels situated as far as possible within normal suburban locations. Brighton Hostel has been constructed with assistance of funds from the Community Health Programme and the Hostel provides accommodation for 36 socially acceptable persons of both sexes. The residents attend outside employment or other training facilities away from the site.

The Hove Centre which is fully funded by the Community Health Programme consists of two 35 place units. One unit caters for adults who require day activity centre training and who live at home. The other unit provides special assessment and therapy programmes for children and adults who are both mentally retarded and physically handicapped. Both units are non-residential.

Research and Review Psychologist

Although Community Health Programme funds were approved for the above appointment, it has not been possible to recruit a suitable officer. The duties attached to the position will involve establishing methods of evaluation of community orientated services.

Co-Ordinator—Training in Community Psychology

Community Health Programme funds were approved for this appointment, however, it has not been possible to recruit a suitable officer. The Co-ordinator will programme and co-ordinate training and education of professional, sub-professional and community agencies.

Voluntary Agencies

Recovery/Grow Organisation

This organisation has been funded by the Commonwealth Government for the past three years under the conditions of the Community Health Programme. The balance of funds are provided by the organisation through fund raising activities and donations.

Recovery/Grow is involved with self help programmes for persons requiring counselling and assistance with every day problems and in addition is making a worthwhile contribution to the rehabilitation and re-socialisation of persons who have suffered from stress and psychiatric illness. At present there are 25 groups functioning throughout Western Australia.

PROJECTS ADMINISTERED BY PUBLIC HEALTH/MEDICAL DEPARTMENTS

Home Care Services

This project is supported by Community Health Programme funds and provides for the delivery of Extended Care Services to communities in selected areas of the State. The service includes home nursing, domestic and handyman help, operating from various country hospitals.

This service is continually expanding and, at present, there are thirty-four centres fully or partially operational—an increase of 8 from 1975/76.

These centres are:—

Albany	Kellerberrin
Augusta	Kondinin
Boddington	Manjimup
Boyup Brook	Margaret River
Broome	Merredin
Bruce Rock	Moora
Carnarvon	Murray District
Corrigin	Narembeen
Cunderdin	Narrogin
Dalwallinu	Northam
Denmark	Northampton
Donnybrook	Quairading
Esperance	Ravensthorpe
Geraldton	Wagin
Gnowangerup	Williams
Kalgoorlie	Wongan Hills
Katanning	York

Social Work—Geriatrics

In 1976, the Social Worker was increasingly concerned with the development of Home Care Services in country areas. Twenty-one visits were made to centres to consult about established services, and eight new services were begun. Training courses for home care nurses were held at Mount Henry Hospital and these included tutorials in social aspects of care.

Three studies of the disabled were undertaken to ascertain methods of assistance to be provided in the particular communities. There was contact with various helping agencies about the results and the desirable action to be taken.

Mandurah Community Health Centre

Mandurah is a type III Centre and was officially opened on 12th December, 1975. During the first year of operation the new facility has been used extensively by the community and a wide range of full time and part time services have been established successfully. These are detailed at Attachment (2). The liaison with the private medical practice leasing accommodation in the Centre has contributed significantly to the development of the services during 1976. Physiotherapy, occupational therapy, social work, child health and community nursing services are all well utilised. Visiting

specialists regularly attend the Centre. The group room has assumed special significance within the Centre and is utilised during the day and at evenings by a number of voluntary organisations and groups, including Muscular Dystrophy, Alcoholics Anonymous and Weight Watchers. The Silver Chain Nursing Service plans to commence a diabetic clinic and an arthritic clinic, in conjunction with the private medical practice.

Mandurah Community Health Centre is making a significant contribution to upgrading the health of the community.

Busselton Community Health Centre

Busselton Community Health Centre was officially opened on 10th January, 1975. Since inception it has grown from a skeleton staff to a full complement, with private medical and dental practitioners. The Centre's para-medical staff are working to develop a co-ordinated team approach. Several seminars and workshops have been conducted throughout the year in conjunction with groups such as trained nurses, Slow Learning Children's Group and the Health Education Council. Services accommodated at the Centre, other than Centre staff, are—Meals on Wheels Co-ordinator, Community Welfare, Homemakers, visiting private Ophthalmologist and Psychologist. A comprehensive range of health and related activities has been developed at the Busselton Community Health Centre and these are specified in Attachment (3).

Geraldton and Region Community Health Centre

A contract was let on 22nd April, 1976 for the Geraldton and Region Community Health Centre to be constructed in the grounds of the Geraldton Regional Hospital. The contract called for the building to be completed by 2nd June, 1977, at a cost of \$1 129 782. The Centre will provide leased premises for a number of private medical practitioners, and a private dental practice, as well as a comprehensive range of allied health professionals. The Geraldton and Region Community Health Centre is the largest Centre to be initiated in this State, and is expected to make a considerable impact on the provision of preventative health measures in the region. An Interim Advisory Committee has been formed to allow the local community to participate in the development of the Centre and to deal with local matters during the construction period.

South Hedland Community Health Centre

South Hedland has been established with a planned population of 40 000. It is a fast growing town, adjacent to Port Hedland, the administrative centre for the North West and major deep water port for the Pilbara iron ore industry.

Planning of the Community Health Centre was completed in 1976, and a building contract has been signed on 20th May, 1976 requiring the Centre to be completed by 29th May, 1977, at a cost of \$1 125 580. This will be a type IV Centre, providing a full range of services such as Social Work, Infant Health and Community Nursing, Health Education Physiotherapy and Domiciliary Services. Accommodation will be provided for a dental practice and six suites will be available for resident and visiting medical practitioners.

Handicapped Children's Assessment Centre

Although the building for the Centre will not be complete until 1977, the project has been functional since early 1975. During 1976 there has been a steady increase in referrals, with 270 new patients being seen. In the six month period 1st July, 1976 to 31st December, 1976, there were 1 141 attendances.

The present full-time staffing comprises:—

- 1 Developmental Paediatrician
- 1 Social Work Supervisor
- 1 Senior Speech Pathologist
- 1 Librarian
- 1 Clerk
- 2 Typists

In addition, the part-time staffing is:—

- 2 Paediatricians
- 1 Child Health Doctor
- 1 Developmental Psychologist
- 1 Educational Psychologist
- 1 Speech Pathologist
- 1 Physiotherapist

Funding is available for the appointment of a Paediatric Registrar for a one-year training programme in community Paediatrics.

The main source of referral has been from within the Community and Child Health Services (57 per cent), with 12 per cent of referrals outside the Service coming from the Education Department, 7·5 per cent from family practitioners and 6 per cent from the Department for Community Welfare.

Seventy-five per cent of children seen were in the pre-school group, the majority of these being in the 0–3 year bracket.

The major problems referred, in order, were:—

- 1. Behavioural and emotional disorders.
- 2. Intellectual delay.
- 3. Language delay.

Work has commenced on the purpose-built building, which should be ready for occupation in the latter half of 1977. It is proposed to change the name of the Centre to “The Child Development Centre” of the Public Health Department of Western Australia.

Alcohol and Drug Authority—“Carrellis Centre”

Community Health Programme funds were provided to the Alcohol and Drug Authority to establish the Carrellis Centre and other clinics.

This Centre is for the assessment, treatment, rehabilitation, care and management of those suffering from alcohol and drug addiction, and is intergrated within the larger scope of the Authority.

Statistical information of the operations of the Carrellis Centre during 1976 is as follows:—

Total Patients	Male Alcohol	Male Drugs	Female Alcohol	Female Drugs	Male Both Addiction	Female Both Addiction
2 175	1 138	663	106	225	40	3

Total Attendances	Male Alcohol	Male Drugs	Female Alcohol	Female Drugs	Other
4 071	1 819	1 570	148	532	2

Women’s Health Centre

This project was approved for funding as from 1st July, 1975, under the sponsorship of the Women’s Centre Action Group. The administration of the project caused concern throughout 1976. Community Health Programme funding was withdrawn as from 15th September, 1976, because of the organisation’s failure to maintain suitable staff and to operate the Centre to fulfill the purposes originally approved.

Members of staff previously employed by the Women’s Centre Action Group, who resigned or were dismissed during the period of internal conflict, formed the Women’s Centre Staff Association, with a view to obtaining financial support for an alternative Women’s Health Centre. The Community Health Programme Committee was advised on 11th November, 1976 that the new Group had met with the Minister for Health, and support could be forthcoming if an acceptable constitution and an appropriate

administrative structure were developed. During the remainder of 1976, several meetings were held between representatives of the newly formed Women's Centre Staff Association and the Department, with a view to transferring sponsorship of Project W.16 to this Group and to provide funds for the establishment of an alternative Women's Health Centre in West Perth.

Teaching Health Centre

This project is designed to provide a health care service to the population in and around Claremont, as well as affording a facility for training of medical students in general practice.

It is intended to build onto an existing medical practice surgery to provide accommodation for Social Work, Community Health and Child Health Nursing services, Health Education, Physiotherapy and Clinical Psychology, as well as the areas needed to fulfill the teaching function. Lack of funds has precluded the commencement of building and progress during 1976 has been restricted to acquisition of property and development of administrative aspects of the project.

Health Education Council—Resource Centre

St. George's Hall Resource Centre in Perth has been active in developing audio-visual materials and professional information services for community health and community groups. Centre staff have become skilful in their role as resource workers to develop the skills of other workers in the production of health education aids. An exhibition centre has been delayed due to extensive structural alterations and renovations.

The Fremantle Resource Centre may be regarded as fully operative. Active field support is given to health workers and teachers by staff, and the Centre is in regular use for discussion programmes, seminars and training programmes. There is close collaboration with other agencies in the area.

Lockridge Community Health Centre

Lockridge Community Health Centre opened in February, 1976, in a relatively small building of prefabricated structure which is leased from the State Housing Commission. The Health Centre is a pilot project for the Lockridge Community. It is staffed by a Secretary/Co-ordinator, Social Worker, Occupational Therapist and Community Nurse.

An informal approach by Centre staff with the community is an important factor in working towards the continued success of the Health Centre in Lockridge.

Besides the usual work of the professional staff, activities at the Centre include a Drop-in Coffee Shop, which incorporates craft classes and cookery demonstrations, Play Group, Weight Watchers, Alcoholics Anonymous, Family Planning Clinic, Discussion Groups, Health Education Films, Active Advisory Committee and talks. Variety and interest is maintained by way of arranging demonstrations, guest speakers and films on a wide range of topics. The full range of the Centre's activities are described at Attachment (4).

Nardine Women's Refuge

The aim of Nardine Women's Refuge is to provide refuge housing for as many women and children as possible and to give as much support as needed during their stay. In this time the women are helped to arrange financial assistance, accommodation and other services needed. In the year ending 31st December, 1976, temporary accommodation was provided for 229 women and 376 children. Refusals due to overload numbered 208 women and 385 children. Many renovations and repairs were effected, including playroom (renovated and equipped), garage (rebuilt) and the house repainted throughout.

Warrawee Women's Refuge

In 1976 Warrawee has continued to operate smoothly in spite of even greater demands on its services. Temporary accommodation was provided for 242 women and children. The average length of stay has increased to 30 days; for those awaiting

State Housing assistance, the average is over 50 days. If this time could be reduced, more families could be assisted, as 30 to 40 families are turned away each month. However, there is little possibility of reducing the length of stay while alternative permanent accommodation remains so difficult to obtain.

For those accommodated, the subsidy from the Community Health Programme allows the provision of personal counselling; advice on legal and welfare matters and the collection of furniture and clothing. Together with the subsidy, contributions from Fremantle Council and the Community have meant that the high standards of service have been maintained.

Arthritis and Rheumatism Foundation Project

This project funds three Field Nurses, seconded from Community Health Services, to provide a nursing and advisory service for persons suffering with rheumatism and arthritis under the auspices of the Rheumatism and Arthritis Foundation. The areas serviced are:—

- (a) Perth to Albany and surrounding areas;
- (b) Perth to Kalgoorlie and surrounding areas;
- (c) Perth to Geraldton and surrounding areas.

An important secondary benefit of this service has been the improved awareness and knowledge of joint diseases which has been imparted to Community Health Nurses and others who come in contact with the Arthritis Field Officers.

Community Health Sisters

This project is continuing during 1976 and is successfully filling a need in the community. The 16 sisters currently involved cover the following areas:—

Pilbara, Eastern Goldfields, South West and Metropolitan.

Community Health Programme Secretariat

The Secretariat continues in its role of processing all submissions for funds under the Community Health Programme.

The increasing work load of the Secretariat is reflected in the staff changes shown below:—

Staff as at 1/1/76

Admin. Assistant	....	....	....	....	....	C-II-5
Clerk, Subsidies	....	....	....	....	....	C-II-4
Clerk	....	....	....	....	....	C-IV
Typist	....	....	....	....	....	C-V
Field Liaison Officer	....	....	....	....	....	G-II-5

Staff as at 31/12/76

Director	....	....	....	....	....	P-4/5
Clerk in Charge	....	....	....	....	....	C-II-6
Clerk, Subsidies	....	....	....	....	....	C-II-3
Clerk	....	....	....	....	....	C-II-2
Clerk	....	....	....	....	....	C-IV
Typist	....	....	....	....	....	C-V
Field Liaison Officer	....	....	....	....	....	G-II-5
2 Research Officers	....	....	....	....	....	C-II-5/6
O. & M. Officer	....	....	....	....	....	C-II-5/6
Admin. Assistant	....	....	....	....	....	C-II-3/4
Clerk	....	....	....	....	....	C-II-2
Clerk	....	....	....	....	....	C-IV

Medical Student Attachments

During 1976 approximately 50 medical Students have been attached to General Practitioners in rural and outlying areas by virtue of support from the Community

Health Programme. The intention of these attachments is to enable the students, while assisting the General Practitioners, to broaden their medical education and gain experience in the delivery of health care in a community setting.

Karratha Community Health Centre

This Centre commenced operation on 13th December, 1976. Accommodation is provided for a Social Worker, Physiotherapist, Community Health Nurse and supporting clerical staff. Provision has also been made for a medical practice operated by Hamersley Iron Pty. Ltd., a Flying Doctor radio base and visiting services, as well as the usual group activities carried out by Community Health Centres.

Manning Community Health Centre

On Friday, 6th December, 1974, a group of citizens held a meeting to organise a committee with the aim of having a Community Health Centre established in Manning.

As a result of the Manning Committee's work, the Public Health Department established a team to investigate the need for a Health Centre in Manning. This team consisted of a Research Officer, an Administrative Assistant and a Nursing Sister.

The team conducted a thorough investigation of existing health services in Manning and its environs. It also conducted a household survey, taking 25 per cent of the households in the Manning area as its sample. The survey was designed to ascertain the health facilities presently utilised by Manning residents, and the location of these facilities, and the likely utilisation of services if they were provided in the survey area.

Information gathered about Manning was then compared with less detailed information regarding four other areas. These other areas were chosen to be used for comparison because they are generally regarded as "problem" areas and also they have certain characteristics that are similar to Manning. The survey results will be published in a printed report and will recommend the extension of the existing Child Health Centre at Manning, to provide additional rooms for a Social Worker, Public Health Field Nurse, Clerk/Typist and a Sessional Chiropodist.

Aerial Specialist Services

A trial project was designed to provide the remote areas of the State with specialist medical and health services on a regular basis. The project has not been developed during 1976 due to administrative difficulties, but continues to retain the status of a current approved project.

Varley Community Health Centre

This Centre was officially opened on 4th December, 1976. The Community Health Nurses at the Centre provide basic health care to the community and support the doctor of the Royal Flying Doctor Service (Eastern Goldfields Section), who is flown regularly to attend the Centre. It is envisaged that visiting specialists will also use the facilities at the Centre on a regular basis. This is the first Type 1 Community Health Centre to become operational and it is anticipated that the experiences at Varley will have a considerable effect on future planned development of the Community Health Programme in this State.

Southwell, Koondoola and Queens Park Child Health Complexes

These Centres were officially opened on 29th March, 1977. Each of the three Centres had over 100 referrals. Sources of referral were School Health Section, Child Health Services, Teachers and Guidance Officers, General Practitioners, Fremantle Hospital and self referral by patients. The largest category for referral was speech problems, with each Centre indicating an increasing demand for this service.

COMMUNITY HEALTH PROGRAMME

Summary of Recommendations

1. That the Community Health Programme continue to be regarded as an ongoing Programme and that, after consulting with State health authorities, the Hospitals and Health Services Commission report to the Minister at the end of each three-year period to inform the Government of the Programme's effects on the health care system and the health of the community and to seek the Government's approval to the introduction of any further policy changes that are considered necessary for the achievement of the objectives of the Programme.
2. That professional associations be encouraged to participate in discussions on professional inter-relationships in order to report publicly their views on the fashion in which the members of the different disciplines should participate in inter-disciplinary activities.
3. That statutory professional registration authorities and professional associations be encouraged jointly to investigate and formulate updated professional standards and policies concerning interdisciplinary relations and activities.
4. That statutory professional registration authorities and professional associations be asked to report on their present policies concerning appropriate delegation of tasks to support staff such as purposed-trained aides.
5. That Community Health Programme funds be made available specifically for the initiation of training programmes for all categories of personnel involved in community health and related activities.
6. That appropriate arrangements be made and funds provided under the Community Health Programme to enable health personnel working in the field to be released from duty to attend post-graduate and/or refresher courses in community health.
7. That both public and private facilities be utilised to provide clinical training posts for undergraduate and graduate students in community health care, and that where necessary Community Health Programme funds be provided to ensure availability of and access to such facilities.
8. That discussions be held with States, institutes of health training and health professional associations with a view to promoting the development of multi-disciplinary and interdisciplinary training programmes.
9. That the concept of "multi-purpose" aides for health workers be further explored.
10. That relevant authorities be requested to jointly define practicable recognised limits of responsibility and professional accountability of varying health workers in differing clinical situations. In this regard, it would be appropriate for the contrast between workers in remote locations and those in a metropolitan setting to be borne in mind.
11. That State health authorities be encouraged to make special efforts to:—
 - (a) contact deprived groups to identify and meet their needs;
 - (b) develop and clarify concepts of community involvement, giving emphasis where appropriate in each State's situation to local government roles in originating proposals, sponsoring proposals developed by community groups and in area planning activities for health; and
 - (c) foster greater community involvement—at least in an advisory capacity—at area and local level.
12. That greater recognition be given by all involved in community health services to the benefits of community participation in regard to promoting the preventive aspects of the Community Health Programme.
13. That action be taken by States and Territories to communicate the existence of the Community Health Programme and the willingness on the part of the Commonwealth and State Governments to assist community groups and organisations wishing to develop proposals for community health services.
14. That, in funding of community health services in Australia as a whole, deliberate administrative incentives, particularly flexibility, be offered to the States through "block grant" funding of total State programmes and that whenever possible approved projects be co-ordinated at regional, area-wide, or other appropriate level.
15. That, pending the outcome of the current review of Commonwealth Government initiatives in the health and related welfare fields and of Federal/State relationships, the present basis of Commonwealth funding under the community health programme be retained (i.e. for approved projects conducted within States, up to 75 per cent of capital and up to 90 per cent of operating costs).
16. That States consider the view that approved community health projects conducted by non-government organisations be jointly funded at an agreed level by Commonwealth/State Governments. Having regard to the desirability of those organisations making a contribution from their own resources.
17. That up to 100 per cent Commonwealth Government funding of approved projects conducted at national level be retained, and that the views of appropriate State health authorities be sought prior to national projects being approved.
18. That, in order to assist in the evaluation process, and after appropriate consultation with States and other relevant bodies, requirements be set for record-keeping procedures and standards.
19. That, in order to promote the effectiveness of individual projects, evaluation of existing projects be carried out with higher priority, and in the light of the results of the trial of the preliminary "evaluation package".
20. That all projects considered for funding in the future should indicate evaluation and feedback mechanisms that will be applied, having regard to the cost-effectiveness of these mechanisms in relation to the size and cost of the project.
21. That those services presently funded under the States Grants (Paramedical Services) Act be funded under the Community Health Programme from 1st July, 1976.
22. That urgent joint consultations be held between Commonwealth and State health authorities and home nursing organisations receiving financial assistance under the Home Nursing Subsidy Act, with a view to examining ways and means of integrating home nursing services with other community health services.
23. That urgent action be taken by the Commonwealth Government to formalise co-ordinating links between the Community Health Programme and other health and related welfare services (in particular those funded under the States Grants (Home Care) Act and the handicapped Persons Assistance Act) with a view to the rationalisation of, and where desirable the integration of, such services.
24. That it be made a condition of Commonwealth Government funding of family planning activities conducted by family planning associations that where services are involved, they should be provided from community health facilities where such facilities are available.
25. That appropriate courses in family planning be provided for health professionals working in community health services.
26. That greater consideration be given by hospital managements to developing projects designed to establish closer links between hospital services and the community.
27. That Financial assistance be provided under the Community Health Programme towards the operating costs of health hostels where funds are not available under other government programmes.
28. That greater emphasis and encouragement be given to health education and health promotion functions of health services at the community level.
29. That further financial support under the community health programme be provided as an impetus for the further development of community health oriented education and training programmes.

30. That, subject to further discussion with the States, financial assistance be made available under the Community Health Programme for new health transport initiatives and developments as outlined in the Hospitals and Health Services Commission report "Health Transport Policies for Australia."
31. That financial assistance be provided under the Community Health Programme for new initiatives to facilitate clinical training of health personnel in rural areas, to provide location incentives for rural and isolated areas, and to assist in continuing education of health professionals in those areas.
32. That Community Health Programme funds be made available for the funding of community health services or parts of services that were operating prior to 1st July, 1973, where such funding is considered essential to promote integration and co-ordination of those services with other community health services.
33. That administrative details of devolved responsibilities be determined in joint consultation with the States and that an early meeting be held for that purpose.
34. That legislation authorising the Commonwealth Government to enter into formal arrangements with the States and national organisations receiving grants under the Community Health Programme be considered.

ATTACHMENT (2)

MANDURAH COMMUNITY HEALTH CENTRE

ACTIVITIES TO: DECEMBER 31st, 1976

Private Services

Medical Practice (10 Doctors)	Besides general practice the medical practitioners are also involved with an Extended Care Programme
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Public Services

Domiciliary Nursing—	Areas cover:—
6 Full Time Sisters	South Mandurah—Lake Clifton, Dawesville, Novarra and Falcon
Silver Chain	.....	.....	North Mandurah—Golden Bay, Singleton, Madora Bay and San Remo
2 Part time Sisters			East Mandurah—Murray Bend, South Yunderup, Ravenswood, North Yunderup, Barraghup, Furnissdale, Riverside Gardens, Riverview and Coodanup
2 Casual			Mandurah—Complete town area
			Pinjarra—North Dandalup, Carcoola to North Waroona
			Patients—2 759
			Visits—27 653
			Kilometres—102 690

Home Help—

7 Part Time	.....	.....	Patients—325
			Visits—1 504*

* Figures are from July, 1976 only.

Visiting Services

Psychiatrist (1)	.....	.....	1 day per month for consultation
Ophthalmologist (1)	.....	.....	1 day per month for consultation
Community Welfare Department—			
1 Welfare Officer	.....	.....	2 days per week
2 Field Officers			
Irrabeena (Slow Learning Childrens Group)—			
1 Doctor	.....	.....	2 days each six months
1 Social Worker			
1 Psychologist			
Health Education	.....	.....	2 days per week
			Areas covered: Mandurah to Waroona
Community Nursing (1)	.....	.....	Mandurah, Yarloop, Harvey and Waroona—Visits 8 Schools (Primary and High Schools)
Child Health Nursing (1)	.....	.....	1½ days per week at Centre
			½ day per week at Pre-School and Kindergarten. Approximately 1 000 mothers attending in Mandurah area
Physiotherapy (2—P/T)	.....	.....	Combined 32 hours per week. (Commenced July) 2 722 patients. This figure does not include post-op patients at Murray District Hospital
Social Worker (1)	.....	.....	Case Work. Close liaison with Marriage Guidance and Alcoholics Anonymous. Numbers not to hand
Occupational Therapist (1)	.....	.....	Case Work (approx. 40 patients) works in conjunction with Silver Chain and Medical Practitioners. Extended Care Programme—visits Murray District Hospital: Wearne House and Retirement Village
Chiropody	.....	.....	Sessional Basis—1 day per week. 33 patients a day—waiting list extends to 8 weeks
Marriage Guidance	.....	.....	1 day per week. Average 2 clients per fortnight. Discontinued August. All enquiries now referred to Fremantle Clinic.
Meals on Wheels	.....	.....	Commenced October. 10 meals prepared at Centre—16 supplied from Murray District Hospital. Long waiting list. Paid cook and co-ordinator. 25 voluntary workers.
Centre Bus	.....	.....	6 Town circuits per day. Home pick-ups and return. 21 820 km per year. Travels to Murray District Hospital daily

Special Activities and Clinics

Ante Natal Classes	....	....	....	....	Midwife: Child Health Sister: Gynaecologist. Monday evenings 7.30 p.m. (8 week programme)
Muscular Dystrophy	....	....	....	....	2nd Monday/month
Arthritis and Rheumatism Foundation	....	....	....	....	4th Tuesday/month
Yoga	....	....	....	....	Wednesday mornings—approx. 25 members Thursday evenings—approx. 56 members
Peel Weight Watchers	....	....	....	....	Wednesday night/week—50+ members
Playgroup	....	....	....	....	6 sessions per week—90 children. Mother participation
“Grow”	....	....	....	....	Wednesday afternoon/week. Group therapy. 9/10 members
Alcoholics Anonymous	....	....	....	....	30 members. Saturday night/week

Other Group Activities

Sculpture and Pottery	....	....	....	....	10.00 a.m. Monday/week
Arts and Crafts	....	....	....	....	2.00 p.m. Monday/week

Miscellaneous

Advisory Committee	....	....	....	....	First meeting July. Monthly meetings 2nd Wednesday/month
Special Events	....	....	....	....	Centre Fete. Over 1 000 people attended. Held December. Asked by public to make this an annual event

ATTACHMENT (3)

BUSSELTON COMMUNITY HEALTH CENTRE 1/1/76 TO 31/12/76

250 persons/day

Private Services

Medical Practice (5)	<i>Busselton Population Studies</i> —Only one Doctor associated with population studies. (Also associated with the Department's School Dental Programme. Dentist runs the Physical Fitness Programme. Ceased May 1976. Dental therapy ceased April 1976.)
Dental Practice (1)	....	....	....	....
Dental Therapy (1)	....	....	....	....

Public Services

Community Nursing (1)	....	....	....	....	<i>Busselton, Capel, Nannup, Augusta</i> —11 schools are visited. Twice week at Centre
Child Health Nursing (1)					
<i>Domiciliary Nursing—</i>					
Silver Chain (3F/T) (3P/T)	....	....	....	....	Busselton District, Dunsborough to Capel 2 110 pts 20 715 visits 48 000 kms. Seminars bi-monthly all domiciliary nurses of S.W. 50 attend
Home Help (3F/T) Social Work (1)	....	....	....	....	Case work (30/month + 30 visits/month) and Group work especially single parent families—Day and Evening—Also groups at Nannup and Margaret River. Monthly meetings of Social Workers.
Physiotherapy (1)	....	....	....	....	Centre and Hospital 2 641 patients, 9 861 treatments, 2 physiotherapists from March to November
Health Education (1)	....	....	....	....	Programmes at Busselton, Margaret River, Nannup and Manjimup. Seminars in association with Family Med. Prog. and Family Planning Association and Health Education Council films
Free Bus Service to and from Clinic			....	....	1 242 passengers/year. 4 bus runs/day. 4 540 km from 1/8/76 to 31/12/76. Ensures co-ordination between clients, hospital and 50 voluntary workers. 50 meals delivered from hospital/day
Messages for Meals on Wheels					

Visiting Services

Surgeon	....	....	....	....	Fortnightly for consultation
Ophthalmologist	....	....	....	....	2 days/month—Lions Club donated an Inami Slit Lamp
Optometrist	....	....	....	....	2 days/month
Psychologist	....	....	....	....	6 programmes for 15 people—3 days/week extended to evenings. Changed to 2 days from August 1976
Speech Therapist	....	....	....	....	No service in 1976
Arthritis and Rheumatism Nurse	....	....	....	....	Special nurse spends periods of 5 days in Busselton, Margaret River and Augusta using Centre as base.
Social Security	....	....	....	....	Fortnightly
Community Welfare Department Homemakers (2)	....	....	....	....	2 days/week and 1 visiting District Officer
Citizens Advice Bureau	....	....	....	....	12 personal interviews and 5 telephone enquiries/month. Later moved to Shire Offices

Special Group Activities and Clinics

Ante-natal Classes	....	....	....	....	Midwife, physiotherapists, doctors, child health sister, psychologist—6 week programmes, Tuesday 1.00 p.m. and 3.00 p.m. Wednesday, 7.00 p.m. 15–20/session
Obesity Programme	....	....	....	....	Result of Busselton Population Studies
Anti-smoking Programme	....	....	....	....	By private Doctor
Busselton Population Studies	....	....	....	....	By private Dentist. Ceased May 1976
Physical Fitness Programme	....	....	....	....	Public Health Clinic. Commenced November 1976
Immunisation Clinics	....	....	....	....	20/30 attend an evening weekly
Weight Watchers	....	....	....	....	Monthly meetings
Slow Learning Childrens Group	....	....	....	....

Muscular Dystrophy Foundation	....	....	Monthly meetings	
Playgroup—Busselton Senior High School	....	5 sessions/week, to May 1976.	4 sessions per week from June to December.	
Community Health	....	....	6 week Course.	3rd/4th year boys and girls
Voluntary Dietition	....	....	2 days/week.	Commenced October 1976
Other Group Activities				
Dressmaking	....	....	....	1.00 p.m./week
Leatherwork	....	....	....	20 persons attend—Ceased February 1976
Dried Floral Art	....	....	....	Fortnightly from January to April 1976
Hobbytex	....	....	....	Fortnightly 6 weeks from February to March 1976
Writers Workshop	....	....	....	Monthly reading of poetry and stories
Camera Club	....	....	....	2 evenings/month
Yoga	....	....	....	2 evenings/week
Special Activities				
Health Seminars	....	....	....	Centre Staff Regional Health Workers—Diabetes Public
Films	....	....	....	Health and related topics
Special Community and Health Education for High Schools				10 periods — 12 hours/week in group room
Medical Student	....	....	....	5th year employed by Centre in Christmas vacation—6 weeks 75/76. 6 weeks 76/77
Screening by Specialists				
Lions Club Save Sight Programme	....	....	Glaucoma Clinic—Ophthalmologists, 880 people screened.	Several cases detected
Miscellaneous				
St. John Ambulance Association Display	....	2 days		
Police Department Display of Pictures	....	Display of Pictures 1/week		
Visit by Kearman College Manjimup	....	35 students		
Art Exhibition at Centre from High School	....	10 days.	Visits from Harvey, Newton Moore, Margaret River, West Busselton, Vasse and Dunsborough Schools.	
Advisory Committee	....	\$1 500 grant		
Visits by Extended Care Physician and E/C Social Worker				

ATTACHMENT (4)

LOCKRIDGE COMMUNITY HEALTH CENTRE FEBRUARY 1976 TO 31/12/76

75 persons/day

Private Services
Nil

Public Services			
Social Worker (1)	....	....	Lockridge Community
Occupational Therapist (1)	....	....	Lockridge Community. Commenced April
Community Nurse (1)	....	....	Lockridge Community. Commenced March
Messages and Co-ordinator for Meals on Wheels			Commenced August
Health Education	....	....	Discussion and films

Visiting Services
Nil

Special Activities and Clinics			
Playgroup	....	....	Once week. Commenced March
Contact Lunch	....	....	Once month. Commenced October
Family Planning Association	....	....	Once month. Commenced July
Senior Citizens Meeting	....	....	Once month. Commenced March
Medibank	....	....	Guest speaker re new Health Services—September
Youth Club for Lockridge Teenagers Community Meeting			October and November

Other Group Activities			
Coffee Group	....	....	Once week. Commenced April
Craft Classes	....	....	Once month. Commenced April
Soft Toy Classes	....	....	Once week. Commenced May
Crochet Classes	....	....	Once week. Commenced June
Copper Work Classes	....	....	Once week. Commenced June
Leather Work Classes	....	....	Once week. Commenced July
Discussion Group	....	....	Once week. Commenced July

Miscellaneous

Advisory Committee Meeting	....	....	....	Once month
Staff Meetings	....	....	....	Twice month
Miss M. Reid & Associates	....	....	....	Film and discussion
Action Group	....	....	....	June and July
First Aid Display	....	....	....
Agencies Meeting	....	....	....
Childrens Group	....	....	....
Advisory Group	....	....	....
Floral Art Display	....	....	....
Homemakers Meeting	....	....	....
Lockridge Scout Committee Meeting	....	....	....
Bus Entry	....	....	....
Think Tank	....	....	....
Social Work Students (2)	....	....	....	September
Medical Student	....	....	....	One day—September
Share a Family	....	....	....	Meeting with Community—Social Worker
Eden Hill Clinic	....	....	....	3 sessions a week from September—Extension of Health Centre Services—Social Worker, Occupational Therapist and Community Nurse
Christmas Party Meeting				
Christmas Party for Centre Groups				
Christmas Party for Lockridge Pre-schoolers				

Appendix VII

Pharmaceutical Services Branch

W. M. Griffiths, B. Pharm., F.P.S. (G.B.), M.P.S.

Principal Pharmacist

BRANCH FUNCTIONS

This Branch carries out the day-to-day administration of the Poisons Act, Poisons Act Regulations, Therapeutic Goods requirements under the Health Act, the Pesticides Regulations, and also supervises functions of pharmaceutical services in Western Australian government hospitals and institutions.

POISONS ACT AND REGULATIONS

The Regulations were amended to allow a stronger modern safe complying with new industrial insurance requirements to be used for the storage of drugs of addiction.

By Proclamation, the incorporation of 1,1,1-trichloroethane in aerosols for human therapeutic use was prohibited: although no such aerosols were found to be marketed in Western Australia, advice of fatalities implicating these therapeutic aerosols overseas, the Poisons Advisory Committee deemed it prudent to prevent their introduction into Western Australia.

PESTICIDES

One hundred and seventeen (117) applications were received from the National Technical Committee on Agricultural Chemicals for clearance for use in Australia. Twenty four (24) of these were new chemicals examined for the first time. The other ninety three (93) were requests to extend the use of previously cleared chemicals against extra target pests or on to additional crops, and also included some modifications in formulations.

The Western Australian Pesticides Advisory Committee examined one hundred and sixty five (165) applications to register formulations of pesticides for use within the State. Seventy six (76) were approved for registration during the year; eighty nine (89) were still under consideration at 31st December, 1976.

Sixty one (61) previously registered formulations were cancelled or withdrawn during the year.

Twelve hundred and twenty four (1 224) formulations were registered for use in Western Australia on 31st December, 1976.

Dental Health Services

J. L. Prichard, Dip.D.S., B.D.Sc., F.I.C.D.

Principal Dental Officer

1. CLINIC SERVICE

1.1 Rural and Remote Areas

1.1.1 *Kimberley Region*

Regular clinics are maintained at: Wyndham, Derby and Broome, with visiting services to Kununurra, Halls Creek, Fitzroy Crossing, Koolan Island, Kuri Bay, and Missions at Kalumburu, Balgo Hills, Lombadina, Beagle Bay, La Grange and the Derby Leprosarium.

Major stations Sturt Creek, Gordon Downs, and Nicholson are visited annually.

An aerodental service has been inaugurated, involving all stations in the Kimberley Region.

1.1.2 *North West Region*

Regular clinics are maintained at Port Hedland, South Hedland, Dampier, Karratha, Wickham, Exmouth, Paraburdoo, Tom Price and Newman; with visiting services to Goldsworthy, Shay Gap, Onslow, Pannawonica, Wittenoom and Shark Bay.

1.1.3 *Southern Region*

Regular clinics are maintained at Beverley, Margaret River, Ongerup and Three Springs; with visiting services to Morawa, Quairading, Jerramungup and Gnowangerup.

In addition to the above services, mobile road clinics provided services to the Northern Agricultural (Dalwallinu), North East Goldfields (Laverton, Trans Line), East Pilbara (Marble Bar, Nullagine), Murchison and Gascoyne areas (Meekatharra, Cue, Mt. Magnet, Yalgoo), and Southern Agricultural (Northcliffe, Cascade, Condigup).

An aerodental service provided dental cover for remote regions including Giles Weather Station, Warburton Ranges Mission, Wingellina, Blackstone, and Cosmo Newberry.

1.2 School Dental

1.2.1 *School Dental Therapy Clinics*

At 31st December, 1976, seventy six Primary Schools were serviced by forty two therapy clinics. A total of twenty eight thousand, one hundred and forty seven pre-school and primary children were eligible for dental care. This is 17.7 per cent of enrolled primary school children.

The geographical distribution of clinics:

North West Region: Two (Newman and South Hedland).

Metropolitan Region: Forty.

1.2.2 *School of Dental Therapy*

Children from eighteen schools in the vicinity of Mt. Henry training school and from fourteen schools in the vicinity of Warwick training school attended for preventive dental services.

Enrolments for treatment were:

Mt. Henry—3 038.

Warwick—4 199.

2. TRAINING COURSE FOR SCHOOL DENTAL THERAPISTS

2.1 First Year

Fifty six trainees commenced their first year in February, 1976. Fifty trainees satisfactorily completed the first year: four having resigned while two failed the course.

2.2 Second Year

Fifty trainees successfully completed second year and will officially graduate on 1st February, 1977.

Three trainees required extra tuition and should complete the course during the first term, 1977.

2.3 Acknowledgements

(a) Principal Psychologist, Mental Health Service, Mr. R. Smith assisted in arranging the Human Relations course. Clinical Psychologists—Mr. R. Brueske and Mr. D. Mellor conducted Human Relations lectures to first and second year trainees.

(b) Dr. E. Mackay-Scollay, Head of Division of Microbiology, State Health Laboratories Service, assisted in arranging the Microbiology practical classes. Mr. M. Fogarty assisted in conducting these classes.

(c) The Health Education Council provided lectures on health education and topical social issues.

The assistance of these persons and organisations was most appreciated.

3. DENTAL HEALTH EDUCATION UNIT

3.1 Community Dental Health Education

Community dental health education was continued through the school system and health agencies. This consisted of:

Forty lecture sessions to teacher training colleges.

Fifty lecture sessions to other health agencies.

Close liaison with the Education Department and the Health Education Council has continued as part of an integrated approach to community dental health education.

3.2 Assistance to Dental Health Service Personnel

3.2.1 Consultant services to assist the development of dental health education programmes by Dental Officers and School Dental Therapists.

3.2.2 Assistance in planning and conduct of dental health education courses for trainee school dental therapists.

3.2.3 Preparation and distribution of teaching aids for field clinics.

3.3 Kindergartens

The dental health education programme for mothers and children in kindergartens includes dental inspection of children for case finding and referral. One hundred and seven kindergartens were visited and six thousand, one hundred and thirteen children screened for dental disease.

4. RESEARCH AND PLANNING UNIT

A Research and Planning Officer was appointed in July resulting in increased activities in these areas.

5. BUILDING PROGRAMME

5.1 Buildings Completed

The service moved into its new Administration and Stores buildings, adjacent to the School of Dental Therapy at 43 Mt. Henry Road, Como on 9th September, 1976.

The following buildings were also completed during 1976:

School of Dental Therapy—Warwick.

Twenty eight Dental Therapy Clinics.

5.2 Planning for 1977

Finance for the construction of thirty fixed and mobile therapy clinics was approved in the State budget. All these clinics have been allocated to country areas of the State.

6. SUBSIDISED DENTAL CARE

Assistance towards the cost of dental care is provided for children, pensioners and other adults. Income and the number of dependants are the principal criteria in establishing eligibility. Three thousand, three hundred and ninety one people were granted subsidies amounting to \$230 461.25, representing a subsidy of 80.76 per cent of fees.

7. STAFF

Appointments made during the year resulted in a staff total of 396. Distribution of Staff at 31st December, 1976 was as follows:

7.1 Administration

Dental Officers (6)

Therapist (1)

Clerical and General (21)

Wages (10)

7.2 Clinic Service

7.2.1 Metropolitan Region

Dental Officers (6)

Dental Therapists (76)

Dental Nurses/Assistants (42)

7.2.2 Country Region (South West)

Dental Officers (6)

Dental Therapists (0)

Dental Nurses/Assistants (11)

Wages (5)

7.2.3 Rural and Remote Region (North West)

Dental Officers (14)

Dental Therapists (5)

Dental Nurses/Assistants (26)

Wages (4)

7.3 Dental Therapy Training Schools

Dental Officers (13)

Dental Therapists (8)

Dental Nurses/Assistants (30)

Dental Technicians (2)

Trainee Therapists (101)

Clerical and General (4)

Wages (5)

Nursing Administration Section

Miss M. E. Beard, D.N.A., F.C.N.A.
Principal Director of Nursing

1. NURSING SERVICE

There has been a continuing surfeit of Registered Nurses and Registered Nursing Aides in the metropolitan area and in some country districts. However, those situations most subject to nursing staff shortage because of extremes of climate and isolation, have remained so affected:

Kimberley, North West, Murchison, Eastern Goldfields.

Once again the Emergency Nursing Service has provided the personnel necessary to maintain services in such hospitals and nursing posts.

1.1 Emergency Nursing Service

Appointments 1/1/76 to 31/12/76—

6 months	17
12 months	28
	—
Total	45
	—

Number employed at 31/12/76: 45

1.2 Staff

Miss Catherine Flynn retired as Matron, Collie District Hospital, on 30th September 1976, after some 25 years service in Departmental hospitals. Mrs. Doris Hamill was appointed in her place.

Miss M. Farr, Matron, Kojonup, was awarded the British Empire Medal in the Queen's New Year Honour List 1976, for her services to Kojonup and District.

Another retirement was that of Mrs. A. F. Findlay who gave many years of nursing service in Western Australia, and most latterly as Matron, Coolgardie since 19th August, 1969.

Mrs. Helen Barden's sudden death in September last, occasioned sadness, particularly in Mullewa where she had been Matron for the past decade.

The Deputy Nursing Supervisor, Child Health Section: Miss F. Williams, retired in September last after some 20 years service with Medical and Health Services. Her successor Miss B. Bateman, was appointed in October 1976. She has recently obtained the Diploma of Community Nursing at W.A.I.T.

1.3 Community Nursing

Miss M. Reid has now completed one year as Director, Community Nursing, a new position designed to achieve rationalisation and cohesion of nursing services in the Public Health Field. A review of the associated Nurses' Awards has been relevant to these aims.

Public Health Nurses are currently (31/12/76) employed in the following areas—

1.3.1	Community Health Services	Registered Nurses
	176 registered nurses	176
	14 registered nursing aides	
	57 nursing assistants	

1.3.2	<i>Child Health Services</i>				
1.3.2.1	Child Health Section	....	....	....	120
1.3.2.2	School Health Section	....	....	....	23
	23 registered nurses based in high schools including 5 country high schools.				
1.3.2.3	Child Health Services Centres (3)	....			3
	Established in the grounds of primary schools with pre-primary centres. Staff includes a co-ordinating registered nurse and a district Child Health Team				
1.3.3	<i>Chest and Tuberculosis Service</i>	....	....	....	12
1.3.4	<i>Occupational Health</i>	....	....	....	2
1.3.5	<i>Special Treatment Clinic</i>	....	....	....	4
1.3.6	<i>Public Health Laboratories</i>	....	....	....	2
					<hr/> 342 <hr/>

2. NURSE EDUCATION

2.1 Post-graduate scholarships were awarded as follows:—

College of Nursing (Australia), Melbourne

Miss Alison Jenkins—Nursing Administration Diploma Course

Miss K. A. Pratt—Nursing Administration Diploma Course

Miss S. E. de Rohan—Nursing Administration Diploma Course

Department of Nursing, W.A.I.T.

Mrs. J. Kingsbury—Community Health Diploma Course

Miss M. A. Davie—Nurse Education Diploma Course

Helen Bailey Scholarship

Awarded to Miss Nina Byron, Sister-in-Charge, Diabetic Clinic, Sir Charles Gairdner Hospital, to undertake a study tour of 17 weeks to pursue her speciality in Sweden, Denmark, United Kingdom, and United States of America.

2.2 Nursing Aide Programme

Applications have exceeded requirements in each of the Schools of Nursing, and there are no signs of diminution in this trend. Because of commitments to both general and nursing aide programmes, Kalgoorlie decided to limit the nursing aide intake in future to approximately 30 per year.

To achieve appropriate allocation for clinical experience and better continuity of patient care, both Kalgoorlie and Mount Henry now require nursing aide applicants to complete the full 18 months training at the hospital concerned. This period at Mount Henry will also include 12 weeks surgical experience at the Mount Hospital.

Lack of applicants with sufficient education at Derby casts a doubt on the future of the School of Nursing there.

2.3 Appointments

Sisters L. Levett (Albany), A. Reeve (Bunbury), E. F. Turley (Collie), D. F. Parnell (Derby), G. Morey, S. Paul, R. Knight (Kalgoorlie), S. Noll, N. Gibbings (Swan Districts), and P. Butcher (Port Hedland), J. Dowding (part time), L. Kulish (Mt. Henry).

Resignations

Sisters L. Levett (Albany), V. Rouhiainen and J. Felton (Kalgoorlie) and V. Norrish (Swan Districts), L. Kulish (Mt. Henry).

2.4 Student Nursing Aides

Commenced training 1/1—31/12/76:

Albany	....	....	....	....	25
Bunbury	....	....	....	....	21
Collie	....	....	....	....	12
Narrogin	....	....	....	....	18
Kalgoorlie	....	....	....	....	48
Swan District	....	....	....	....	30
Derby	....	....	....	....	10
Port Hedland	....	....	....	....	10
Mt. Henry	....	....	....	....	67

Passed Nurses' Board's Examinations 1976:

Albany	....	....	....	....	19
Bunbury	....	....	....	....	13
Collie	....	....	....	....	7
Narrogin	....	....	....	....	13
Kalgoorlie	....	....	....	....	33
Swan Districts	....	....	....	....	28
Derby	....	....	....	....	6
Port Hedland	....	....	....	....	6
Mt. Henry	....	....	....	....	41

3. NURSING RECRUITMENT

3.1 Bursaries 1976

161 bursaries granted. This included 89 bursaries of 1 year duration. The Medical Department has provided nursing bursaries since 1955. The object has been to encourage students to enter nurse training and assist them financially to complete their 11th and 12th year of high school.

The current level of assistance since June 1974 is \$300.00 per annum. Considerable change has occurred in recent years in the number of students applying to undertake nurse training. All Schools of Nursing are obtaining a plentiful supply of applicants, in fact more than they can accept. Therefore the Nursing Bursary scheme has been discontinued for 1977/78. The situation will then be reviewed.

3.2 Recruitment Officer

A recruitment officer was appointed to the nursing section in 1969. The object of the appointment was to provide correct information to schools and the public regarding the educational requirements for entry to nurse training, and to encourage and stimulate interest of students in a nursing career.

There are now more students applying to the hospitals than can be accepted. Therefore the Recruitment Officer, Mrs. Betty Miller, has transferred to a position in the School Health Service from the 31st May 1976.

I wish to express my appreciation to Mrs. Miller for her willingness and co-operation at all times.

3.3 Nursing Employment Section

Communication through personal interview, telephone, telex and correspondence has resulted in appointments to hospitals throughout the State, as well as in the dispensing of accurate information and advice. This section also undertakes the management of numerous airline bookings, relevant advertisements and maintenance of nursing staff records for Medical and Health Services' personnel.

4. INSPECTIONS

Department and Country Board Hospitals	....	....	....	94
Private Hospitals and Nursing Homes	....	....	....	229
Domiciliary Midwifery	....	....	....	14

5. PRIVATE HOSPITALS

5.1 Closures

Amevo Nursing Home, Bassendean	....	....	....	30	beds
Carmel Nursing Home, Morley	....	....	....	30	beds
Mt. Yokine Nursing Home, Mt. Yokine	....	....	....	43	beds
Ross Memorial Nursing Home, Forrestfield	....	....	....	49	beds
				152	beds

5.2 New Nursing Homes

Chrystal Halliday, Karrinyup	....	....	....	....	24	beds
St. David's, Mt. Lawley	....	....	....	....	42	beds
Bunbury Nursing Home	....	....	....	....	56	beds
					<hr/>	
					122	beds
					<hr/>	

5.3 Extensions of Licence

St. John of God Hospital, Subiaco—							
General	....	....	....	....	2	beds	} 6 beds
Maternity	....	....	....	....	4	beds	
Attadale Hospital	....	....	....	....	....	....	4 beds
Shoalwater Nursing Home	....	....	....	....	....	....	13 beds
Midland Nursing Home	....	....	....	....	....	....	44 beds
							67 beds
<hr/>							
Net increase in Private Hospitals' beds—							
General and Midwifery	....	....	....	....	....	....	10} 37
Nursing Homes	....	....	....	....	....	....	27}

6. CONCLUSION

Once again I am pleased to record my appreciation of Nursing Service personnel in maintaining high standards of practice particularly in situations of isolation (geographical, social and professional) and difficult climatic conditions.

Division of Occupational Health

Dr. A. G. Cumpston, M.B., B.Sc., M.Sc., M.App.Sc.

Director

Occupational Health Centres

Several companies during the past year have sought advice on the establishment of occupational health services and Divisional Officers have commenced a study of the need for such services in areas occupied by a large number of small industries.

As far as can be ascertained approximately 45 nurses now work in many types of industry such as engineering, abattoirs, banks, printing offices, oil rigs and the mining industry.

Pneumoconiosis and Respiratory Function

A survey of the respiratory function of 222 mine workers in Kalgoorlie was completed, other surveys were completed of workers in a number of industries in the Perth Metropolitan area.

Statistical analyses of the data did not reveal any evidence of occupationally caused respiratory disease in cement workers, or welders in heavy engineering works.

X-rays of men engaged in sandblasting did not reveal any evidence of cases of pneumoconiosis.

Pneumoconiosis in the Mining Industry

During 1976, 5 715 men were medically examined for entrance into the mining industry. An additional 5 788 miners were re-examined and of these 291 were found to be suffering from silicosis. Twenty new cases of silicosis were discovered and this number expressed as a rate per 10 000 examinations is consistent with the lower incidence rates observed in recent years.

Figure 1

Year			Total number of examinations	Incidence of new cases of silicosis	Rate per 10 000 examinations (silicosis)
1925-29	....	....	13 800	847	614
1930-34	....	....	19 600	380	194
1935-39	....	....	34 100	111	33
1940-44	....	....	29 000	238	82
1945-49	....	....	26 000	293	113
1950-54	....	....	29 400	274	93
1955-59	....	....	30 300	259	85
1960-64	....	....	36 377	409	112
1965-69	....	....	36 477	196	53
1970-74	....	....	24 122	119	49
1975	....	....	8 696	35	40
1976	....	....	5 788	20	35

For the third successive year there were no newly diagnosed cases of tuberculosis in miners. In men who had previously worked in the Wittenoom asbestos mining industry there were two new cases of asbestosis and three new cases of mesothelioma.

Lead

Workers engaged in battery breaking are exposed to the hazard of excessive lead absorption. Divisional Officers are investigating methods which will automate this process and reduce or eliminate the hazard.

General Enquiries

Many and various complaints were received and investigated. A total of 450 visits to industrial plants were made by the Occupational Health nursing staff.

Dermatitis has been observed in relation to the use of sensitized paper, the canning of citrus fruit, the wearing of Indian sandals and the spraying of pesticides.

Seminars and Lectures

Lectures on various aspects of occupational health were presented to various medical and other students, safety officers and to various scientific and industrial groups throughout the year.

NOISE

Community Noise

There has been an increase in enquiries and complaints concerning community noise problems. The majority have been referred to the local shire or city councils for attention, but a significant number have required specialist advice and assistance from the Division. Some local authorities do not possess trained personnel or the appropriate equipment to deal with problems related to noise nuisance. The Division has commenced courses of instruction designed to assist practising health surveyors to measure, evaluate and control community noise.

Barking dogs, air conditioners, compressors and refrigerating plants were common causes for complaint.

Industrial Noise

Management in industry is becoming increasingly aware of the importance of hearing conservation. Preliminary noise surveys were made and advice was given concerning the implementation of hearing conservation to 38, and audiometric surveys were completed for 13, industrial organisations. Statistical analyses confirmed the existence of a noise hazard in many industrial plants.

Lectures on various aspects of noise and hearing conservation were presented to a number of seminars and courses attended by health surveyors, safety officers and engineering graduates.

Kinetics

The training aid "Moving patients in Hospital" was completed and made available to all nurse training hospitals. Lecture demonstration services were supplied to a number of metropolitan and country hospitals including participation in seminars in the Geraldton, Port Hedland and Derby Regional Hospitals.

"Strain reduction" courses were made available to a number of organisations. Routine examinations of the ergonomic aspects of work were made as required throughout the year.

CLEAN AIR

The activities of the Section are described under the following headings:—

A.—MONITORING OF AIR POLLUTANTS

B.—SPECIFIC INVESTIGATIONS AND TESTING

C.—ADVISING ON AIR POLLUTION CONTROL COMPLAINTS

D.—EDUCATION

E.—STATUTORY DUTIES

A.—MONITORING OF AIR POLLUTANTS

1. Dust Monitoring

The Central Electricity Research Laboratory directional dust gauge (C.E.R.L.) and the standard New South Wales glass funnel deposit gauge are used in Western Australia.

Perth Area

15 C.E.R.L. dust gauges were used in the metropolitan area during 1976. Gauges at Welshpool, Rivervale, Jandakot and Coogee were withdrawn and a new gauge installed at Herne Hill.

The locations of the Public Health Department C.E.R.L. gauges as at December, 1976 were:—

City Beach	Welshpool (1)	Naval Base	Wanneroo (3)
East Perth	Kewdale (2)	Maddington (2)	Herne Hill
Lathlain Park	Perth Airport	Rivervale	

For results see Appendix A.

The results from deposit gauges sited at City Beach, East Perth, Perth Airport and Welshpool are shown in Appendix B.

Port Hedland

Five dust gauges were maintained in Port Hedland during 1976. Officers of the Shire of Port Hedland have continued to collect the dust samples and forward them to the Section's laboratory at Perth for processing. The dust samples for each site have been analysed for iron and manganese expressed as Fe₂O₃ and MnO₂ every second month.

The dust gauges are located as follows:—

Gauge No.	Location
1	Anderson Street, Port Hedland
3	Near Shire Offices, Port Hedland
4	Cooke Point, Port Hedland
5	Leslie Salt, Redhill
9	Stanley Street, South Hedland

For results see Appendix C.

Cape Lambert/Dampier/Karratha

8 C.E.R.L. gauges were maintained in the area, as shown below, during 1976.

The Health Surveyor, Shire of Roebourne, has continued to collect the samples and maintain the gauges in the area and forward the samples to Perth for processing and chemical analysis.

Gauge No.	Location
1	Port area, Point Sampson
2	Immediately South of the port area, Cape Lambert
3	North of Wickham Townsite
4	South of Wickham Townsite
5	Parker Point, Dampier
6	Bowling Club, Dampier
7	Karratha Airport
8	Fire Station, Karratha

For results see Appendix D.

Kalgoorlie

The dust survey in and around Kalgoorlie and Boulder was continued during 1976. The health surveyors for both local authorities maintain the gauges, collect the samples and forward them to the Section's Perth laboratories for processing.

For results see Appendix E.

Gauge No.	Location of Dust Gauges at Kalgoorlie
1	Great Boulder Mine
2	South Kalgoorlie School
3	East Kalgoorlie School
4	Eastern Goldfields High School
5	Boulder Central School
6	South Boulder School
7	Boulder Caravan Park
8	West Kalgoorlie Freight Yards
9	Kalgoorlie School
10	North Kalgoorlie School
11	Killarney Street, Lamington

Chemical analyses of the dust samples have been carried out by the Government Chemical Laboratories.

2. Sulphur Dioxide and Particulate Monitoring

Perth Area

Monitoring for sulphur dioxide and particulates has continued in the metropolitan area. In July, monitoring at Bayswater, North Fremantle, and two sites, continued from the Coogee area pollution study, was discontinued. Surveillance in the residential areas continues to show that in Perth the measured levels of sulphur dioxide are extremely low. The Division wishes to thank the residents of many areas who have volunteered to assist the Section in having and operating these sampling stations in their own homes.

For results see Appendices F and G.

Kalgoorlie

Monitoring for sulphur dioxide has continued from a site near the centre of the town during 1976.

For results see Appendix H.

Three extra monitoring sites were initiated during 1976, at Boulder and two sites East of the nickel smelter, in co-operation with the smelter management.

For results see Appendix I.

Pinjarra

Monitoring at Pinjarra, and at a site to the East of the alumina refinery, was commenced in co-operation with the refinery management in January, 1976.

For results see Appendix J.

3. Oxides of Nitrogen Monitoring

Sampling sites operating on a 24 hour time base located at Claremont, Crawley and Perth have been operated throughout the year.

For results see Appendix K.

4. Hydrogen Sulphide Monitoring

Hydrogen sulphide was measured at a single site on the boundary of a nickel refinery at Kwinana. Although the odour of the sulphide is still occasionally noticeable, the measured concentrations are generally very low, as shown in Appendix L.

Motor Vehicles

City surveys and monitoring for pollutants was continued at 57 Murray Street, with a new site used, at the corner of William and Murray Streets, for the continuous monitoring of carbon monoxide.

The results are shown in Appendices M, N and O.

Lead was determined at 57 Murray Street, Perth on a regular basis.

For results see Appendix P.

B.—SPECIFIC INVESTIGATIONS AND TESTING

1. Fluorine

Superphosphate Works

The six superphosphate manufacturing plants were tested during the year for fluorine emissions.

For results see Appendix Q.

Brickworks

The intensive monitoring programme utilising static monitoring and continuous monitoring with more detailed meteorological observations was initiated for the 1975/76 grape growing season in the Midland area. Up until December, 1976 vegetation damage was slight following the installation of further dry scrubbers on the kilns at the nearby brickworks.

Static Monitoring for Fluoride (Limed Filter Paper Sites)

1. Sandalfords Winery
2. In first row of vines below winery
3. In vines between river hollow and the winery
4. In vines in river hollow below winery
5. At the cattle ramp near the old homestead
6. On the river below the old homestead

For results see Appendix R.

Further monitoring has now been undertaken for the 1976/77 growing season.

During 1976 pilot dry scrubbing units for the removal of fluorine from brick kiln exhaust gases were constructed by brickworks at Midland and Armadale. The pilot units were tested and proved to be very efficient.

For results see Appendix S.

A full sized scrubber was constructed by the company at Midland and installed on a tunnel kiln. The results of testing are shown in Appendix T.

2. Tracer Experiments

In co-operation with the Department of Conservation and Environment and the Bureau of Meteorology the Clean Air Section undertook further tracer experiments at an alumina refinery near Pinjarra. The object of the tests was to verify classical dispersion formulae used in modelling the plumes from the boiler chimneys. Tests were conducted in November.

3. Miscellaneous

The Clean Air Section continued to assist other Government Departments, Local Authorities and private companies when called on throughout the year.

C.—ADVISING ON AIR POLLUTION CONTROL COMPLAINTS

The number of written and telephoned complaints increased during the year due to dust, odours and fumes from a wide spectrum of industries. Odour complaints from abattoirs were frequent during the early part of the year. There were frequent complaints of dust and odour from a cement works in South Coogee. Most complaints arise from the unfortunate siting of certain dusty or odourous industries too close to residential areas.

Advice

Many enquiries were received by the Section from members of the public and from students for information and material for projects.

D.—EDUCATION

Lectures were given during the year at Mt. Lawley Technical School, the Western Australian Institute of Technology, and to various professional organisations.

E.—STATUTORY DUTIES

All meetings of the Scientific Advisory Committee, of which the Director of Occupational Health and Clean Air is Chairman, were attended. Numerous reports have been prepared for the committee by the Senior Engineer and his staff.

Inspections of premises by these Officers have been carried out as required by the Scientific Advisory Committee.

Members of the staff continue to represent this Department and the Department of Conservation and Environment on National and State bodies. Expanding surveillance requirements and statutory duties have continued to increase the Section's work load.

APPENDIX A

DUST TESTING PROGRAMME—PERTH METROPOLITAN AREA 1976
Mean total dirtiness* to the twelve months period January–December, 1976

Gauge						Total Dirtiness	Gauge						Total Dirtiness
City Beach	....	....	....	....	....	1.9	Maddington 1	....	....	....	....	....	3.5
East Perth	....	....	....	....	....	2.1	Maddington 2	....	....	....	....	....	3.2
Lathlain Park	....	....	....	....	....	2.3	Rivervale	....	....	....	....	....	2.4
Welshpool 2	....	....	....	....	....	3.6	Herne Hill	....	....	....	....	....	3.8**
Kewdale 1	....	....	....	....	....	3.9	Wanneroo 1	....	....	....	....	....	1.2
Kewdale 2	....	....	....	....	....	4.4	Wanneroo 2	....	....	....	....	....	1.5
Perth Airport	....	....	....	....	....	2.6	Wanneroo 3	....	....	....	....	....	1.3
Naval Base	....	....	....	....	....	5.9							

Kwinana Area

						1972	1973	1974	1975	1976
Woodman Point	....	....	....	....	....	1.8	1.6	5.6	....	....
Munster	....	....	....	....	....	....	1.2**	1.0	2.8	1.6
Wattleup	....	....	....	....	....	1.6	1.8	1.2	....	....
Naval Base	....	....	....	....	....	....	3.5	3.8	4.5	3.7
Kwinana	....	....	....	....	....	10.1	12.3	6.9	....	....
Medina	....	....	....	....	....	2.0	1.7	1.0	....	....
Mandogalup	....	....	....	....	....	....	3.3	3.7	4.7	5.6
Caledonia	....	....	....	....	....	....	2.9	4.3	4.7	1.7***

* C.E.R.L. Dust Gauge Readings
** 6 months only
*** 8 months only

APPENDIX B

DEPOSIT GAUGES 1976
Deposition (milligrams per square metre per day)

Sampling Point					Total Insolubles	Total Inorganic
Belmont	....	....	....	....	23	13
City Beach	....	....	....	....	17	8
East Perth	....	....	....	....	37	24
Welshpool	....	....	....	....	56	30

APPENDIX C

DUST TESTING PROGRAMME—PORT HEDLAND 1976

Mean total dirtiness and mean per cent iron ore in total dust from dust gauges for the twelve months period January–December 1976.

Gauge		Total Dirtiness*	Per Cent Iron Ore	Gauge		Total Dirtiness*	Per Cent Iron Ore
1	....	13.6	53	5	....	4.0	18
3	....	4.5	33	9	....	6.1	7
4	....	3.3	21				

* C.E.R.L. Dust Gauge

APPENDIX D

DUST TESTING PROGRAMME—CAPE LAMBERT/DAMPIER/KARRATHA 1976

Mean total dirtiness and mean per cent iron ore in total dust from dust gauges for the twelve months period January–December 1976.

Gauge			Total Dirtiness*	Per Cent Iron Ore	Gauge			Total Dirtiness*	Per Cent Iron Ore
1	....	....	3.5	....	5	....	....	4.9	49
2	....	....	3.2	....	6	....	....	4.4	33
3	....	....	1.9	....	7	....	....	5.0	12
4	....	....	2.5	....	8	....	....	5.4	8

Gauges—1, 2, 3, 4 Cape Lambert
5, 6 Dampier
7, 8 Karratha

* C.E.R.L. Dust Gauge

APPENDIX E

DUST TESTING PROGRAMME—KALGOORLIE 1976

Mean total dirtiness* for the twelve months period January–December, 1976

Gauge								Total Dirtiness	Gauge								Total Dirtiness
1	....	....	....	....	....	....	....	14.9	7	....	....	....	....	....	....	....	3.7
2	....	....	....	....	....	....	....	11.4	8	....	....	....	....	....	....	....	2.4
3	....	....	....	....	....	....	....	23.0	9	(3 months only)							3.2
4	(4 months only)							10.7	10	....	....	....	....	....	....	....	4.0
5	(5 months only)							5.3	11	....	....	....	....	....	....	....	3.6
6	(8 months only)							4.0									

* C.E.R.L. Dust Gauge

APPENDIX F

METROPOLITAN SULPHUR DIOXIDE CONCENTRATIONS 1976

(All results expressed in micrograms per cubic metre)

Site		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Seven Highest 24 hr Values for Year							Annual Average
Perth	....	15	15	20	14	16	20	14	9	16	19	18	14	109	65	63	56	55	54	53	16
Banganup	....	8	1	9	5	4	3	2	2	9	15	21	42	129	108	104	86	85	82	74	10
Bentley	....	2	3	6	4	5	6	8	8	9	10	7	11	42	37	35	35	31	28	27	7
Claremont	....	0	4	7	3	3	5	4	3	4	7	7	7	58	37	30	29	25	21	19	5
Inglewood	....	1	2	5	3	4	2	3	4	2	4	5	5	24	19	18	18	14	14	14	3
Kardinya	....	0	1	2	2	1	2	2	....	....	....	....	....	19	10	9	8	8	8	8	1
Medina	....	1	0	5	3	2	3	4	3	2	3	3	2	71	25	22	19	18	16	16	3
Orelia	....	1	1	2	2	2	3	3	3	3	2	2	3	38	22	18	13	11	11	10	2
Wattleup	....	1	1	1	3	4	4	....	....	....	....	....	....	29	22	22	16	15	14	13	2
Wembley Downs	....	0	2	3	3	0	2	2	2	2	4	4	3	19	17	14	12	12	12	12	2

APPENDIX G

METROPOLITAN SMOKE READINGS 1976

(All results expressed in micrograms per cubic metre)

Site					Annual Average	Site					Annual Average
Perth	....	....	....	....	6	Kardinya	....	....	....	....	3
Banganup	....	....	....	....	2	Medina	....	....	....	....	3
Bentley	....	....	....	....	5	Orelia	....	....	....	....	2
Claremont	....	....	....	....	4	Wattleup	....	....	....	....	3
Inglewood	....	....	....	....	8	Wembley Downs	....	....	....	....	4

APPENDIX H

KALGOORLIE SULPHUR DIOXIDE CONCENTRATIONS 1976

(All results expressed in micrograms per cubic metre)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	5	0	1	....	0	0	0	0	0	0	0	1
Maximum Hourly Average	286	66	274	....	0	0	0	3	6	3	0	97
Maximum Daily Average	51	3	20	....	0	0	0	0	0	0	0	11
Minimum Daily Average	0	0	0	....	0	0	0	0	0	0	0	0

APPENDIX I
BOULDER SULPHUR DIOXIDE CONCENTRATIONS 1976

Site	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Seven Highest 24 hr Values for Year							Annual Average
Boulder	1	1	5	7	16	3	7	30	33	33	40	41	43	71	7
Unit No. 1 ....	....	....	4	4	3	3	41	57	57	80	86	86	86	115	9
Unit No. 2 ....	....	....	3	5	11	9	4	13	16	26	26	39	39	39	6

APPENDIX J
PINJARRA SULPHUR DIOXIDE CONCENTRATIONS 1976
(All results expressed in micrograms per cubic metre)

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Seven Highest 24 hr Values for Year							Annual Average
Pinjarra Townsite	0	0	1	1	2	4	1	1	1	1	1	2	12	10	10	7	7	7	7	2
Hills East of Refinery	....	....	6	2	1	3	3	3	2	1	3	3	14	13	13	12	12	12	12	3

APPENDIX K
METROPOLITAN OXIDES OF NITROGEN CONCENTRATIONS 1976
(All results expressed in micrograms per cubic metre)

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Highest 24 Hour Average	Lowest 24 Hour Average	Average
Perth— 57 Murray Street 	68	48	63	83	113	131	117	96	59	42	52	75	282	3	79
Claremont— Cnr. Queenslea Drive and Stirling Highway 	52	49	46	59	114	92	98	71	46	33	41	39	328	0	62

APPENDIX L
HYDROGEN SULPHIDE KWINANA 1976
(All results in micrograms per cubic metre)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	6	4	0	$\frac{1}{2}$	1	0	4	1	0	0	0	0
Highest Daily Average	70	45	0	5	15	2	80	10	0	0	5	0
Highest 3 Hour Average	105	120	0	30	30	15	150	90	0	15	45	0

Yearly Average 1.3 μgm^{-3}

APPENDIX M
CARBON MONOXIDE AT 57 MURRAY STREET, PERTH 1976
(Results expressed in parts per million)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	2.0	2.0	2.3	2.2	....	1.8	1.6	1.7
Highest 1 Hour Average	18	9	15	6.5	....	4	4.5	6.5
Highest 8 Hour Average	7.6	4.1	7.7	4.6	....	3.3	2.6	4.9

Yearly Average 1.9 ppm

APPENDIX N
CARBON MONOXIDE—CNR. WILLIAM AND MURRAY STREETS, PERTH
(Results expressed in parts per million)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	2.5	2.0	1.9	....	....	2.6	2.5	....	....	....	....	....
Highest Daily Average	4.8	4.3	4.1	....	....	4.8	6.3	....	....	....	....	....
Highest 3 Hour Average	8.3	7.0	5.2	....	....	7.8	11.8	....	....	....	....	....
Highest 1 Hour Average	10 $\frac{1}{2}$	11 $\frac{1}{2}$	10 $\frac{1}{2}$	....	....	13 $\frac{1}{2}$	17 $\frac{1}{2}$	....	....	....	....	....

Average 2.3 ppm

APPENDIX O

TOTAL HYDROCARBONS—57 MURRAY STREET, PERTH 1976

(Results expressed in parts per million)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average	0·7	....	....	....	1·5	1·7	1·7	1·6	....	1·7	1·8	1·6

APPENDIX P

LEAD—24 HOUR EXPOSURE TESTS TAKEN AT 57 MURRAY STREET, PERTH 1976 (OUTER CITY)

(Lead expressed in micrograms per cubic metre)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	0·3	0·7	0·7	0·5	0·8	1·0	1·0	0·7	0·6	0·4	0·7	0·7
Highest 24 Hour Average	4·0	1·7	2·5	2·1	2·25	1·7	2·2	2·0	1·1	0·7	1·3	1·3
Lowest 24 Hour Average	0·01	0·3	0·2	0·2 (29 days)	0·3 (30 days)	0·4 (29 days)	0·3	0·2 (29 days)	0·3 (28 days)	0·2	0·2 (29 days)	0·4 (23 days)
Yearly Average .....	....	....	0·67	Height of sampling point above road surface—3m.								
Yearly Highest Average 24 Hour Sample .....	....	....	4·0	Distance of sampling point from centre line of road—24m.								
Yearly Lowest Average 24 Hour Sample .....	....	....	0·01	Method of sampling—low volume continuous filter.								

APPENDIX Q

FLUORIDE EMISSIONS FROM SUPERPHOSPHATE WORKS

Works	Kilograms per hour
Esperance	0·37
Albany	0·19
Bunbury	0·21
Bayswater	0·14
Kwinana	0·45
Geraldton	0·18

APPENDIX R

STATIC FLUORIDE MONITORING, MIDLAND

(Micrograms fluoride)

Direction of Site from Source Site No.	1	2	3	4	5	6
1st Sampling (14/10/75)	5	5	3	4	....	8
2nd Sampling (20/10/75)	20	27	18	18	19	30
3rd Sampling (27/10/75)	24	41	24	33	51	43
4th Sampling (3/11/75)	15	19	13	22	29	23
5th Sampling (10/11/75)	34	37	24	22	43	42
6th Sampling (17/11/75)	1	2	1	1	2	3
7th Sampling (24/11/75)	1	1	2	3	2	4
8th Sampling (1/12/75)	2	2	2	1	1	2
9th Sampling (8/12/75)	3	11	2	2	....	18
10th Sampling (15/12/75)	8	10	8	10	19	14
11th Sampling (22/12/75)	15	26	23	23	15	23
12th Sampling (29/12/75)	4	6	5	6	4	6
13th Sampling (12/1/76)	10	9	13	5	25	24
14th Sampling (26/1/76)	13	16	30	25	32	41
15th Sampling (9/2/76)	17	22	17	15	23	24
16th Sampling (23/2/76)	28	35	28	32	34	38
17th Sampling (8/3/76)	19	30	24	18	21	29
18th Sampling (19/3/76)	12	15	11	10	22	23

APPENDIX S

FLUORIDE SCRUBBING EFFICIENCY TESTS
Brickworks—Midland—Pilot Fluoride Scrubber

Date	% Efficiency of Fluoride Removal
16/7/1976	96
26/7/1976	96
2/8/1976	97
9/8/1976	98

Brickworks—Armadale—Pilot Fluoride Scrubber

Date	% Efficiency of Fluoride Removal
15/10/1976	96 low sulphur fuel
22/10/1976	95 low sulphur fuel
29/10/1976	98 low sulphur fuel
4/11/1976	85 high sulphur fuel

APPENDIX T

FLUORIDE SCRUBBING EFFICIENCY TESTS
Brickworks—Midland—Full Sized Scrubber

Date	% Efficiency of Fluoride Removal
23/11/1976	44-94
29/11/1976	28-58
14/12/1976	88-95
21/12/1976	96

State X-Ray Laboratory

B. E. King, M.Sc., B.Sc.

Physicist in Charge

INTRODUCTION

The State X-Ray Laboratory has been concerned with radiation safety in Western Australia since the 1950s. In 1958 the Radioactive Substances Act was proclaimed, and the Laboratory provided the technical facilities necessary for the administration of the Act. From 1963, with the establishment of the Physics Division of the Laboratory the Division was responsible to the Radiological Advisory Council for the administration of the Act. With the proclamation of the Radiation Safety Act in 1976 and the replacement of the former Council by the new Radiological Council, the Division has continued to provide the necessary administrative and technical services. In addition, as part of a programme aimed at ensuring that radiation is used safely, the Division provides advice on radiation physics and radiation protection, calibrates X-ray equipment and radiation measuring instruments, conducts lectures and short courses on radiation safety and provides a film badge radiation monitoring service.

The work of the Radiological Council and the Physics Division of the State X-Ray Laboratory is described in more detail in this report.

LEGISLATION

The Radiation Safety Act, which was passed by the Western Australian Parliament in 1975 was proclaimed on 7 May 1976. At the same time, the new Radiological Council was appointed with the following membership:

Chairman: Dr. J. C. McNulty—Commissioner of Public Health and Medical Services

Members: Dr. J. Glancy—Radiologist
Dr. M. Quinlan—Nuclear Medicine Specialist
Mr. R. W. Stanford—Physicist
Mr. G. E. Bennett—Radiation Engineer
Dr. E. N. Maslen—Representative of the Interests of Tertiary Institutions

Dr. I. Surveyor was appointed as deputy to Dr. Quinlan, Dr. J. de Laeter deputy to Mr. Stanford, Mr. S. Ross deputy to Mr. Bennett and Professor R. G. Wales deputy to Dr. Maslen. Subsequently, on the Council's recommendation, Dr. A. Cumpston, Director of Occupational Health was appointed a member of the Council.

The Council has appointed five sub-committees to advise it on specific areas of radiation usage. These committees and the number of meetings held are the Medical Advisory Committee (3), Dental Advisory Committee (0), Industrial Radiation Committee (3), Non-Ionising Radiation Committee (4), and the Chiropractic Examining Committee (1).

During 1976, the Council and its committees proceeded with the drafting of new regulations. Until these are completed and gazetted, the regulations under the Radioactive Substances Act will continue in force, and the licensing and registration system will remain unchanged.

There is provision under the Radiation Safety Act to control the use of "electronic products" which emit radiations not controlled by the previous Act, viz, non-ionising, electromagnetic radiation, or particulate radiation or sonic, infrasonic or ultrasonic waves.

Microwave and other radio-frequency generating apparatus, lasers, sources of ultra-violet light etc. can be prescribed so that they come within the provisions of the Act. Another significant change in the new Act is to require the registration of irradiating apparatus, prescribed electronic products, and premises where these latter two categories, or radioactive substances are used. Licences will be required by users of the three categories, but there is provision for the granting of exemptions.

Table I shows the number of licences and registrations in effect at 31 December. Table II shows the number of new licences approved during 1976.

TABLE I
LICENCES AND REGISTRATIONS

Licences Current at 31 December 1976				Radioactive Substances	X-Ray
Medical and Dental	....	....	....	17	145
Non-Medical	....	....	....	224	120
Total	....	....	....	241	265

Registrations Current at 31 December 1976				Radioactive Substances	X-Ray
Medical	....	....	....	Nil	25
Dental	....	....	....	Nil	247
Total	....	....	....	Nil	272

Each licence may represent multiple uses of radioactive substances or X-ray equipment. e.g. one licensee has dental x-ray facilities at 33 separate locations.

TABLE II
NEW LICENCES APPROVED DURING 1976

Licences				Radioactive Substances	X-Ray
Medical and Dental	....	....	....	2	6
Non-Medical	....	....	....	41	13
Total	....	....	....	43	19

FILM BADGE RADIATION MONITORING SERVICE

The film badge radiation monitoring service provides a means of detecting exposure to ionising radiation for persons using x-rays and radioactive substances. The number of persons monitored rose by 4 per cent during 1976 to 2 390. The number of individual films processed during the year rose by 2·75 per cent to 20 761.

Table III shows the number of persons using film badges in each employer group.

TABLE III
NUMBER OF PERSONS USING FILM BADGE MONITORING
IN 1976 IN EMPLOYER GROUPS

Medical, Hospitals	....	....	....	....	....	....	509
Medical, General Practitioners	....	....	....	....	....	....	80
Medical, Radiologists and other	....	....	....	....	....	....	143
Chiropractors	....	....	....	....	....	....	35
Dentists	....	....	....	....	....	....	973
Non-Medical	....	....	....	....	....	....	650
Total	....	....	....	....	....	....	2 390

Details of personal radiation exposure as recorded by film badges are kept by the State X-Ray Laboratory. These records are kept on microfilm, and are readily accessible should dose information be required. The microfilm form of record facilitates storage for an indefinite period.

FIELD WORK—X-RAYS AND RADIOACTIVE SUBSTANCES

Laboratory personnel make regular visits to the premises of users of x-rays and radioactive substances. New users are advised on radiation protection requirements and existing establishments are visited to ensure that previous recommendations are

being followed and that a satisfactory standard of radiation protection is being maintained. These visits contribute to the maintenance of radiation exposure of personnel at a low level and minimise the possibility of a serious radiation accident. In addition to inspecting the facilities and safety procedures, the Laboratory's Radiation Officers assist those concerned to make more effective use of radiation by advising on areas within their competence, such as medical and veterinary radiography.

The frequency of visits is determined by the extent of the radiation hazard presented. Industrial radiography operations are visited a number of times each year, whereas small hospitals and medical and dental practices are visited at less frequent intervals.

Eight country trips were undertaken during the year, three of which were by air. Over four hundred individual visits were made to licenced or registered establishments.

EDUCATION

The education of users of radiation, particularly in industry, continues to be an important part of the Division's work. Poor standards of operation of radiation producing equipment, poor observance of radiation protection procedures, and occasional unwarranted concern about the hazards of radiation are often the result of lack of knowledge of the effects of radiation and a lack of training in the use of the equipment. The training of many professional groups lags behind the sophistication of the techniques they are using, and it has been found that the effort directed towards lectures and short courses is of great benefit. The following courses were given in 1976:

- Basic Radiography for Country Hospitals (3 one week courses; 33 students)
- Radiation Safety in the Use of Radiation Gauges in Industry (4 three day courses; 60 students)
- Radiographic Processing (5 half or one day courses; 16 students)
- Veterinary Radiography (four lectures; part of course for veterinary nurses)

In addition, Laboratory personnel give lectures on radiation safety topics to a variety of groups:

Topic	Organisation
Radiation in the Community	Environmental Health Students, W.A. Institute of Technology
Dental Radiography	Perth Dental Hospital, Staff Nurses
The New Radiation Safety Legislation	Public Health Association
The New Radiation Safety Legislation	Medical Staff, Royal Perth Hospital
Radiation Safety	Medical Department, Cadet Radiographers

The following papers were presented to meetings of professional organisations:

- "New Laws for New Radiations", B. E. King—Annual Meeting of the Australian Radiation Protection Society, Sydney, May 1976.
- "Aqueous Liquid Radioactive Waste Disposal", L. M. Davies—Annual Meeting of A.R.P.S., Sydney, May 1976.
- "A Comment on New Units—Re-defining the Roentgen", B. M. Hartley—Annual Meeting of A.R.P.S., Sydney, May 1976.
- "X-Ray Analysis Equipment; experience in implementing the N. H. & M.R.C. Code of Practice in W.A.", B. M. Hartley—Annual Meeting of A.R.P.S., Sydney, May 1976.
- "Development of a Sterile Laminar-Flow Fume Cupboard for Radio-pharmaceutical Preparations", L. M. Davies—Asia and Oceania Congress of Nuclear Medicine, Sydney, September 1976.
- "Design and Installation of Fume Hoods for Radioisotope and Chemical Uses", L. M. Davies—Federal Conference of the Australian Institute of Refrigeration, Air-Conditioning and Heating, Melbourne, March 1976.
- "The Work of the State X-Ray Laboratory", L. M. Davies—Conference of New Zealand Medical Physicists Association, Auckland, February 1976.

DIAGNOSTIC RADIOGRAPHY—MEDICAL AND DENTAL

National surveys in many countries have shown that next to the natural background, medical diagnostic radiography is the greatest source of ionising radiation exposure to the population. It has always been a primary concern of the Council and the Physics Division to keep this source of exposure to a minimum, and compliance of medical x-ray equipment with the recommendations of the International Commission on Radiological Protection has always been an important requirement. The Division's officers inspect every new medical x-ray unit for compliance with the I.C.R.P. recommendations, with particular emphasis on those items which have a direct bearing on the dose delivered to the patient. A gradual improvement in the equipment has been evident, although there are still occasions when newly installed equipment is found to deliver unnecessarily high patient doses.

The equipment used for dental radiography in Western Australia shows a high level of compliance with the I.C.R.P. recommendations. It is believed that the standards of radiation protection in W.A. dental practices are the best in Australia, with the corresponding lowest doses to the patients.

NON-IONISING RADIATION

The Radiation Safety Act includes provisions for "electronic products", which can produce non-ionising radiation, to be prescribed by regulations so that they come within the authority of the Act. Drafting of regulations to permit microwave ovens to be prescribed was not completed during 1976 but it is anticipated that the regulations will be ready in 1977. Lacking statutory authority in this area, the staff of the Division have surveyed ovens on request, and regular visits are made to premises where ovens have shown excessive leakage.

New ovens sold in Australia must comply with standards adopted by the State Electricity authorities, and it has generally been found that ovens currently being sold exhibit low leakage of microwave radiation. During the lifetime of an oven, it may suffer general wear and tear and it may have to undergo maintenance several times. It is important that the safety features are not impaired either by wear or during the maintenance, and the detection of excessive leakage will impose special responsibilities on maintenance personnel. It is intended to provide short courses on microwave radiation safety for these personnel.

When microwave oven regulations have been completed, it is intended to give attention to lasers, ultra-violet lamps and other sources of radiation.

The Division is gradually equipping for the surveillance of a range of radio-frequency radiations as well as visible, infra-red and ultra-violet light. In addition, equipment is being obtained to ensure that monitoring instruments can be kept in proper calibration.

VETERINARY RADIOGRAPHY

In previous reports, reference has been made to the great increase in veterinary radiography and concern was expressed about the standards of radiography and radiation protection in some practices. In co-operation with the Australian Veterinary Association, one of the Division's officers has lectured on radiography in the Association's course for Veterinary Assistants. The Division is represented on a working group of the Radiation Health Committee which is preparing a Code of Practice in Veterinary Radiography and Radiotherapy.

RADIATION MONITORING AND COUNTING EQUIPMENT, RADIATION STANDARDS ETC.

The Division is equipped with a range of monitoring instruments for the field measurement of alpha, beta, gamma, x, and microwave radiation and visible light. For ionising radiation, the instruments cover the range from low energy x-ray analysis equipment, colour television receivers etc., to the high energy gamma rays from Cobalt-60 and radium.

A 512 channel analyser with low background counting assembly permits the analysis of small samples of radioactive material. Detectors include a 7.5 cm x 7.5 cm Sodium Iodide crystal for low level counting and a pure germanium detector for high resolution counting.

The Laboratory maintains a sub-standard X-ray dosimeter calibrated against the Australian primary standard at the Australian Radiation Laboratory in Melbourne. This is used for calibration of monitoring instruments and superficial therapy X-ray apparatus used by dermatologists and radiotherapists. 21 monitoring instruments and 10 superficial therapy units were calibrated during the year. A range of standard radioactive sources are also used for calibration of monitoring instruments.

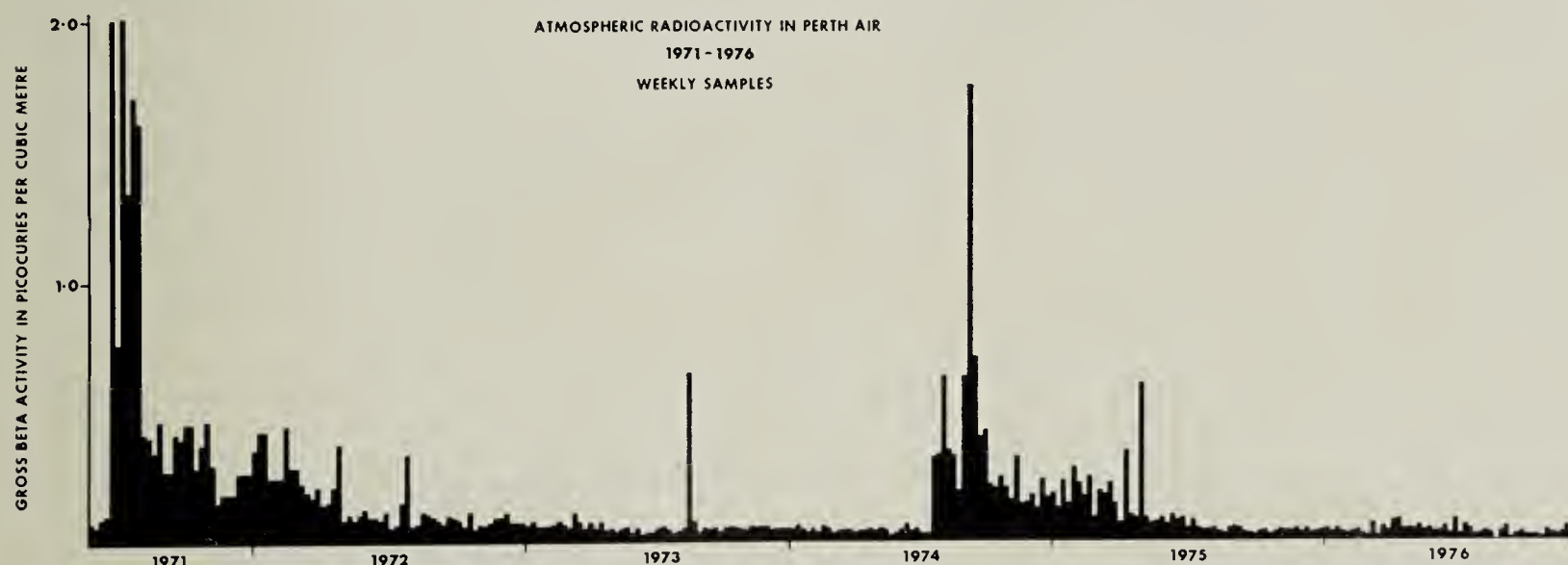
Photometers for the measurement of light in laser beams and the brightness of X-ray image intensifier phosphors have been added to the Division's equipment.

TECHNICAL ADVICE

It is an important function of the Laboratory to give technical advice on radiation protection and radiation health matters to members of the public, applicants for licences, and to licencees. A considerable effort is put into advice on the design of radioisotope laboratories and on radiation protection in X-ray facilities.

ENVIRONMENTAL RADIOACTIVITY

For some years, the Division has conducted a continuous monitoring programme for radioactivity in rainwater and the atmosphere. Up to 1974, this was of special interest due to atmospheric nuclear tests carried out in the southern hemisphere. The chart shows the level of gross beta activity in weekly air samples from early 1971 to December 1976. There has been a gradual return to a low background level from the peaks of recent years. All air filter samples for this period have been retained and the Division is co-operating with the Physics Department of the W.A. Institute of Technology in making the samples available for a long term study of bromine and lead in the atmosphere.



PERTH MEDICAL CENTRE—RADIATION PROTECTION OFFICER

From the beginning of 1976, Mr. L. M. Davies took up the post of Radiation Protection Officer for the Perth Medical Centre. Users of radiation on the site are the Sir Charles Gairdner Hospital, The State Health Laboratory Services, the University of W.A. and the State X-Ray Laboratory. The Radiation Protection Officer, while remaining on the staff of the State X-Ray Laboratory, is responsible to a committee of representatives of the four bodies named for the administration of radiation protection on the Medical Centre site.

VISIT OF NUCLEAR POWERED WARSHIP

With the resumption of visits of nuclear powered warships to Australian ports, personnel of the Division joined with the Australian Atomic Energy Commission and the Australian Radiation Laboratory in providing continuous radiological surveillance

during the visit of the U.S. Submarine "Snook" to the naval base at Garden Island from 14 to 19 August. A plan to deal with a possible emergency was formulated jointly with the W.A. State Emergency Service.

During the visit, continuous monitoring of radioactivity in the sea and of gamma radiation in the air adjacent to the submarine was carried out. Air samplers were operated at the base and on the mainland. No significant increase in levels of radioactivity or gamma radiation were detected during or following the visit.

MEMBERSHIP OF COMMITTEES

The Physicist in Charge is Secretary of the Radiological Council and a member of the Dental Advisory Committee.

B. M. Hartley is Secretary of the Medical Advisory Committee, the Industrial Radiation Committee and the Non-Ionising Radiation Committee.

L. M. Davies is a member of the Chiropractic Examining Committee.

The Physicist in Charge is a member of the N.H. and M.R.C.'s Radiation Health (Standing) Committee. L. M. Davies is a member of the Radiation Health Committee's working groups on the Design of Radioisotope Laboratories and on a Code of Practice for Veterinary Use of X-rays. Mr. Davies is Executive Officer of the Perth Medical Centre Site Radiation Committee; he is W.A. representative on the Committee of the Australian and New Zealand Society of Nuclear Medicine and a member of the committee of the Australian Radiation Protection Society.

B. M. Hartley is treasurer of the W.A. Branch of the Australian Institute of Physics.

STAFF

The permanent staff of the Physics Division numbers four physicists, two radiation officers, a technician and three office staff, with one temporary radiation officer. With the establishment of the new position for the Perth Medical Centre's Radiation Protection Officer, an additional physicist was appointed to the staff of the Division.

It is a pleasure to place on record the enthusiasm and conscientious manner with which the staff perform their duties.

Appendix XII

Library and Technical Information Service

B. Proud, B.Sc.Agr. (Sydney) Dip. Lib.
Librarian and

J. Davis, B.A., M.S.L.S.
Technical Information Officer

1976 has been a year of great change. Dr. John Woolcott retired as Medical-Officer-in-Charge on July 22, 1976, after 26 years of service to this section.

A re-organisaton of staffing has resulted in the creation of a Library Section and a Technical Information Service Section within the Library and Technical Information Service.

LIBRARY SECTION

The Library has suffered to a great extent from staff problems and shortages. During the process of re-classifying a position, the item was vacant for 4 months.

Unfortunately this has resulted in a very large backlog in cataloguing. This can be seen by comparing the totals for books, given in Table 1. The smaller totals for 1976 do not reflect the number of books actually obtained but the number which were able to be catalogued.

Library staffed branch libraries were established at Child Health Services in January and Community Health Services in February. In October these were combined to form the Community-Child Health Services Library. This amalgamation is very satisfactory in that the subject areas covered by the separate branch libraries overlapped considerably. Better use of resources is now possible.

The branch library at State Health Laboratory Services is providing a valuable reference service to the staff, both in Perth and at the country laboratories.

A start has been made on making country personnel more aware of the services available to them. It has been very gratifying to note the increased number of new staff members, both of the Public Health and Medical Departments, who are brought to the library before they take up their appointments. It is best to make this initial contact on a personal basis.

TABLE 1
NEW BOOKS CATALOGUED IN 1976

Public Health Department	....	....	....	....	330
Community-Child Health Services	....	....	....	....	174
State Health Laboratory Service	....	....	....	....	48
State X-Ray Laboratories	....	....	....	....	97
Dental Health Services	....	....	....	....	11
Occupational Health Division	....	....	....	....	16
Hospitals	....	....	....	....	240
					916

Previous totals were: 1972, 889: 1973, 1 061: 1974, 1 244: 1975, 1 717

TABLE 2
INTERSTATE AND OVERSEAS LOANS

	1972	1973	1974	1975	1976
Australia	113	102	181	287	165
Overseas	5	14	15	10	14
Total	118	116	196	297	179

TABLE 3
INTRASTATE LOANS

	1972	1973	1974	1975	1976
Courier Service ....	....	....	....	758	608
Others ....	....	....	....	146	192
Total	996	806	876	904	800

TABLE 4
EXTERNAL BORROWINGS

	1972	1973	1974	1975	1976
Interstate	205	222	372	462	628
Intrastate	662	497	751	457	713
				Courier	
				155	280
				Other	
Total	867	719	1 123	1 074	1 621

JOURNALS

Additional new journals: 19.
Average monthly circulated: 1 204.

PHOTOCOPIES

Monthly average of photocopying of library material: 911.

The lower figure for journal circulation for 1976 reflects the streamlining of journal circulation procedures which was introduced in the last quarter of the year. The new system applies to the State Health Laboratory Services, Occupational Health and some other areas. It has saved the library considerable staff time and also allows people located in one area to have access to a larger number of journals.

TECHNICAL INFORMATION SECTION

Even at the turn of the century it was said that “only the more rugged mortals should attempt to keep up on current literature”.

To aid in this struggle the Technical Information Officer scans all incoming periodicals received by the Library, then selects and distributes information likely to be significant to individuals within the department, in other government agencies, and in numerous health service organisations.

Over 70 box files and continuing bibliographies are maintained on health topics of current interest, i.e. acupuncture, hyperactive children, euthanasia. These files are especially helpful when dealing with requests for “instant information” from staff and general public.

New this year is a weekly newsheet containing summaries of articles of potential interest to people in the Public Health field.

The Technical Information Service continues to submit material for the Health Surveyors Technical Circular and the bulletins of several other health-related agencies.

Health Surveying Branch

J. F. Slattery, M.R.S.H., F.A.I.H.S.

Chief Health Surveyor

INTRODUCTION

During the year the Officers of the Branch continued to provide a State wide Health Supervisory Service, and maintained its essential function which is to measure and control environmental hazards relating to human health.

A summary of activities for the year 1976 is set out in the following report.

1. Environmental Health—Training

Over a period of several years, the efforts of the Royal Society of Health Examination Board, Departmental Officers, Representatives of the Australian Institute of Health Surveyors and others, who have recognised the need for enhanced levels of training for Health Surveyors, have brought about major changes to the courses of training and further changes were effected during the year under review.

Courses for the Diplomas' of the Royal Society for the Promotion of Health were phased out at the end of 1975, and during 1976 the courses offered were for an Associateship in Environmental Health, a tertiary level qualification offered by the Western Australian Institute of Technology requiring three years full time attendance; and for a Diploma in Environmental Health offered by the Technical Education Division, requiring five years part time attendance.

These awards are now the recognisable qualification for appointment as Health Surveyor in this State.

Late in the year the Associateship was upgraded to Degree status as "Bachelor of Applied Science in Environmental Health" following a successful submission to the Tertiary Education Commission by the W.A.I.T. Advisory Committee for Environmental Health; and arrangements to allow practising Health Surveyors who elect to convert existing qualifications to degree status by enrolment under the "advanced standing" system were completed.

Advances in training standards with the Diploma Course were also obtained when the Technical Education Division accepted the Advisory Committee's recommendation to appoint Senior Lecturers with Tertiary qualifications in Environmental Health, who would be responsible for course supervision and co-ordination.

It is anticipated that the Senior Lecturers will commence duty early in the forthcoming year.

Officers of this Branch are actively involved in both area's of training, and the Branch is represented in the Advisory bodies of both teaching institutions.

2. Trainee Health Surveyors

All four Trainees were again successful with their end of the year examinations, and two having completed their final examinations, were appointed to permanent positions on the Meat Inspection Staff.

The Trainee Health Surveyor scheme which has now operated successfully for 9 years, continues to be a worthwhile activity of value to the Branch and to the Department. The continuing interest by young men and women seeking a career in the area of Environmental Health was again shown by the response to the Departments advertising two positions for Trainees when eighty one enquiries were received.

3. Health Liaison Groups

The four Liaison Groups, Northern Districts, South West, Great Southern and Eastern Districts continued to meet regularly throughout the year, and the object of maintaining communication between the Department and the Country Local Authority Health Surveyor was ensued by a Branch Officer being in attendance at each meeting.

4. Regional Health Groups

A Regional Health Group is formed when, with the approval of the Commissioner of Public Health, two or more Local Authorities share the services of a Health Officer, and share the associated costs.

Regional Health Groups normally are formed only in rural areas where the nature and extent of development does not require a full time health supervisory service, or economic factors preclude the appointment of a Health Surveyor on a full time basis.

As changing circumstances have impact upon the financial and administrative arrangements, constant review of all Health Regions is maintained to ensure that the apportioning of the officers time, and the financial contribution from each of the affected Local Authorities is equitable.

During the year, all regions were reviewed, and investigation relating to the changed circumstances in three was commenced with a view to a re-arrangement of groupings where practicable.

5. Health Supervision North West Areas

Changes in circumstances has dictated numerous changes to the arrangements for this service since its inception sixteen years previously, and predictably further changes were made or planned during 1976.

As a consequence of the earlier changes, which involved certain Local Authorities engaging a Health Surveyor on a full time basis, and re-grouping of other Local Authorities, at the beginning of the year the Departmental service was confined to the Local Authority District of East Pilbara, the Eastern Goldfields, which are provided with regular supervisory visits by a Departmental Officer from Head Office, and the Kimberley Health Region which comprises the Local Authority Districts of West Kimberley, Broome, Wyndham and Halls Creek, with a Departmental Officer resident in the Region.

The Kimberley Health Region has doubled in size and development since the inception of the scheme, making it extremely difficult for one officer to provide adequate Health Supervision: Late in the year forward planning to improve this situation was achieved when the previously known Kimberley Health Region was dissolved, and two new Regions formed, the Kimberley Health Region No. 1 comprising the Districts of West Kimberley and Broome, with a Departmental Health Surveyor resident at Derby as at present, and Region No. 2, comprising the Districts of Wyndham and Halls Creek with a Departmental Health Surveyor resident at Wyndham.

The Officers commenced duty at the end of August, and improved service and environmental Health standards are anticipated.

6. Meat Inspection

Meat Inspection Services at the four metropolitan abattoirs is a continuing activity and was maintained throughout the year.

The Officers engaged on meat inspection duties are also responsible for supervision of works sanitation, hygiene of personnel, storage and transport of meat and meat products, and practical tuition of students.

In Country areas where meat inspection in the first instance is the responsibility of Local Health Authority Officers, the survey commenced the previous year in an endeavour to obtain adequate inspection services and uniformity in procedures was continued and is continuing: Despite amended scales of Inspection fees which were designed to prevent economic loss being incurred by a Local Authority when the costs of providing the service exceeded the moneys collected, difficulties are still being encountered in some areas and arrangements have been made for a close examination to be made of these situations during the forthcoming year.

Never-the-less improvements are being obtained, and additional appointments of officers specifically for meat inspection duties were made by two Country Local Authorities during the year.

Figures relating to the annual slaughtering and inspection of food animals throughout the State are shown as Appendix A.

7. Meat Industry

As with previous years, surveillance of all facets of the meat industry was continued including works, transport and personnel.

During the year four country works ceased operations, and two new premises were constructed. Departmental assistance was requested for the design for five other proposals, but by the end of the year these had not advanced beyond the planning stage.

The total number of works operating during the year 1976, totalled 67 of which 14 are licensed for export.

Seventeen new transport vehicles, and sixty-nine with current licenses were examined, and after some deficiencies were corrected all were approved to operate.

The long standing and continuing arrangement with the Transport Commission which will not license a vehicle proposed for the transport of meat, until first approved by the Department allows the maintenance of proper standards and provides invaluable assistance in safeguarding the Public Health.

Although some deficiencies still exist, steadily improving standards are being attained both with works, and methods of transport.

During 1976, the Meat Industry was seriously affected by drought requiring the slaughter of large numbers of animals both on farming properties and at registered meat works.

Carcases of animals slaughtered on farms were disposed of by burying under controlled conditions; however the excessive numbers being slaughtered at licensed works—(Sheep slaughtered at two metropolitan abattoirs exceeding 20 000 daily) severely taxed available refrigeration space—and supplementary storage at various depots in the metropolitan area had to be used: The storage problem was further aggravated by disruption in the shipping industry affecting meat cargoes designed for export and overloading occurred in a number of the storage facilities.

To prevent spoiled or contaminated meats reaching the Public, a surveillance programme was introduced and maintained until the situation eased.

Other continuing activities relating to the Meat Industry include:—

- (a) Examination of illegal slaughtering of food animals on near suburban rural properties: Action taken stopped the practise and successful legal proceedings were instigated against four of the offenders.
- (b) Salmonella monitoring of major meat works and treatment plants involving sampling of effluents and faecal samples from workers: Where food poisoning potential is shown by the reports of the laboratory examination, corrective action is instigated.
- (c) Zoonosis trace back: Twenty seven specimens submitted for identification from bovine animals were diagnosed as viable or suspected cysticercus bovis. Owners of the animals are identified from the tail tags and trace back and examination of the producing properties are conducted in co-operation with the Department of Agriculture.
- (d) Attendance by the responsible officer at the Standards Association of Australia Sub Committee dealing with Standards of Safety in the Meat Industry.

8. Fishing Industry

Similarly to the Meat Industry, this is a continuing activity involving surveillance of processing works, transport, storage and personnel and evolving and implementing improved standards and procedures relating to these aspects.

An area of long standing concern is the method of transport of wet fish in wooden boxes, and during the year, in co-operation with the Fishermens Association various alternatives were examined, and a prototype container constructed of re-inforced plastic evolved, and is now being evaluated. It is anticipated that major improvements to transport methods will now be introduced early in the forthcoming year.

Examination of the Environmental Health Aspects of all islands comprising the Abrolhos Group was continued in co-operation with officers of the Department of Fisheries and Wildlife, and improving conditions in sanitation is resulting.

9. Food and Liquor

Food: As referred to in reports presented in other years the increasing sophistication of the food industry, and the wide range of foodstuffs now being marketed has made this area of Environmental Health one of increasing complexity and importance.

Activities relating to food during the year included examination of premises and personnel, manufacturing processes, storage, transport and distribution: The examination and sampling of various food stuffs for compliance with prescribed standards, examination of specific complaints relating to food, and investigation and control of food caused illness.

Two particular events which occurred during the year again illustrates the necessity for constant surveillance to protect the public from food borne disease.

The first event involved a continental type processed meat imported from the Eastern States. Investigation of complaints made by the members of three families who had been ill after consuming the meat revealed the presence of Salmonella Morbificans which was also identified in faecal specimens from the affected persons.

Further spread was contained by recalling all consignments from retail outlets, and destroying that portion of the consignment shown by microbiological examination to be contaminated. Other action resulted in improved processing techniques at the point of manufacture.

The second event, related to refrigerated foods at Christmas Island. Late in the year the Commonwealth Department of Health requested the assistance of this Department to provide an officer to examine and make judgement on the islands refrigerated food supplies following mechanical malfunction.

Investigation by a Branch Officer flown to the island revealed the malfunction to be caused by a broken crankshaft, and that the stored food stuffs had been severely affected. Each item was examined, and contaminated or spoiled food condemned: Items affected included ice cream, prepared meats and fish and fish products.

Out of a total value of \$80 000, food to the value of \$30 000 was condemned.

During the year 283 consumer complaints were received from individual members of the Community. The complaints related to a wide variety of foods and frequently referred to condition of premises by hygiene of personnel.

All were examined and corrective action taken.

The complaints were made up as follows:—

Apples	....	....	....	....	4	Fruit	....	....	....	....	6
Apricots	....	....	....	....	1	Grape Juice	....	....	....	....	2
Asparagus	....	....	....	....	2	Hamburger	....	....	....	....	6
Beef	....	....	....	....	2	Hot Dog	....	....	....	....	1
Biscuits	....	....	....	....	5	Ice Cream	....	....	....	....	2
Brandy	....	....	....	....	1	Margarine	....	....	....	....	2
Bread	....	....	....	....	25	Meat	....	....	....	....	19
Breadcrumbs	....	....	....	....	1	Milk	....	....	....	....	21
Cake	....	....	....	....	21	Noodles	....	....	....	....	1
Cereal	....	....	....	....	12	Orange Juice	....	....	....	....	4
Cheese	....	....	....	....	3	Pasties	....	....	....	....	9
Chicken	....	....	....	....	5	Peaches	....	....	....	....	1
Chinese Food	....	....	....	....	4	Pet Food	....	....	....	....	1
Chips	....	....	....	....	2	Pickles	....	....	....	....	1
Choc Milk	....	....	....	....	3	Pie	....	....	....	....	13
Coffee Milk	....	....	....	....	1	Premises—					
Coffee	....	....	....	....	1	General	....	....	....	....	8
Coleslaw	....	....	....	....	1	Butchers	....	....	....	....	2
Confectionery	....	....	....	....	5	Chinese Restaurant	....	....	....	....	1
Conserve	....	....	....	....	4	Delicatessen	....	....	....	....	2
Cool Drink	....	....	....	....	14	Factory	....	....	....	....	1
Cream	....	....	....	....	2	Fish and Chips	....	....	....	....	1
Dates	....	....	....	....	2	Rice	....	....	....	....	5
Fish	....	....	....	....	12	Sausages	....	....	....	....	8
Flour	....	....	....	....	3	Shellfish	....	....	....	....	8

Spaghetti	....	....	....	....	1	Soup	....	....	....	....	1
Squid	....	....	....	....	2	Sweet Corn	....	....	....	....	2
Sugar	....	....	....	....	1	Vegetables	....	....	....	....	1
Syrup	....	....	....	....	1	Tea	....	....	....	....	1
Tinned Food—						Vegetables	....	....	....	....	3
Apples (Baby Food)	....				2	Water	....	....	....	....	4
Apricots	....	....	....	....	1	Yoghurt	....	....	....	....	1
Beef Broth	....	....	....	....	1						
Mushrooms	....	....	....	....	1	Total	....	....	....	....	283

Sampling: Routine and special sampling programmes were maintained during the year. 1 423 samples of various foods were taken, 894 for microbiological examination, and 529 for chemical analysis.

In addition 328 samples of a miscellaneous nature were taken for examination for compliance with the prescribed standards of the relevant regulations.

Where found to be unfit for human consumption the consignment represented by the sample was condemned and destroyed under supervision; or if an article was found to be unsafe or injurious to the Public Health arrangements were made for it to be withdrawn from sale.

Details are as follows:—

Food					Bacterio- logical	Chemical
Apricot Kernels	....	....	....	....		3
Aerated Water	....	....	....	....	5	3
Bread	....	....	....	....		5
Cake	....	....	....	....		7
Canned Tomatoes	....	....	....	....		....
Coffee	....	....	....	....		7
Cereal	....	....	....	....	14	11
Confectionery	....	....	....	....		1
Cooking Oils	....	....	....	....		42
Coconut	....	....	....	....		21
Eggs	....	....	....	....	3	2
Fish and Crustaceans	....	....	....	....	159	162
Flour	....	....	....	....		2
Fruit	....	....	....	....	5	11
Fruit Juice	....	....	....	....		21
Margarine	....	....	....	....		4
Meat and Meat Products	....	....	....	....	492	104
Milk and Milk Products	....	....	....	....	131	24
Mineral Water	....	....	....	....	2	....
Pepper	....	....	....	....	3	....
Peanuts	....	....	....	....		1
Salt	....	....	....	....		3
Sugar	....	....	....	....	6	....
Sausage Casings	....	....	....	....		54
Sherry	....	....	....	....		....
Shellfish	....	....	....	....	9	8
Soup	....	....	....	....	1	1
Tea	....	....	....	....		19
Vegetables	....	....	....	....	63	12
Water	....	....	....	....	1	1
Total	....	....	....	....	894	529

MISCELLANEOUS SAMPLES

Bacteriological							Number
Faeces	....	....	....	....	....	....	45
Abattoir Effluent	....	....	....	....	....	....	200
Blood	....	....	....	....	....	....	9
Bore	....	....	....	....	....	....	10
Animal Swabs	....	....	....	....	....	....	13
Total	....	....	....	....	....	....	277

Chemical							Number
Poison Bait	....	....	....	....	....	....	1
Plastic Bags	....	....	....	....	....	....	7
Water	....	....	....	....	....	....	16
Dye	....	....	....	....	....	....	1
Paint	....	....	....	....	....	....	11
Food Colour	....	....	....	....	....	....	12
Crayons	....	....	....	....	....	....	1
Foam Cups	....	....	....	....	....	....	1
Plastic Beer Barrel	....	....	....	....	....	....	1
Total	....	....	....	....	....	....	51

SAMPLES TAKEN

Chemical							Number
Coconut	....	....	....	....	....	....	243
Crab Meat	....	....	....	....	....	....	2
Duck	....	....	....	....	....	....	1
Fish	....	....	....	....	....	....	301
Plastic Bags	....	....	....	....	....	....	2
Prawns	....	....	....	....	....	....	67
Shellfish	....	....	....	....	....	....	9
Total	....	....	....	....	....	....	625

Bacteriological							Number
Crab Meat	....	....	....	....	....	....	1
Frogs Legs	....	....	....	....	....	....	1
Prawns	....	....	....	....	....	....	78
Shellfish	....	....	....	....	....	....	5
Shark Swabs	....	....	....	....	....	....	4
Total	....	....	....	....	....	....	89

Imported Foods

Examination and sampling of imported foods at each of the main importing centres, Fremantle Wharf, Kewdale Marshalling Yards and the Perth Airport was maintained during the year.

As in previous years, although the volume and nature of imported foods continues to increase, frozen fish off-loaded at Fremantle Wharf continues to predominate: During 1976, 3 707 299 kg's were examined, and inspection fees amounting to \$6 900.51 collected.

All food found to be not fit for human consumption was seized and destroyed. Details of samples taken and food condemned and destroyed are as under:—

CONDEMNED AND DESTROYED

Foodstuff		Weight Kilos		Foodstuff		Weight Kilos	
		k	g			k	g
Fish Frozen—				Sundry Canned—			
Smoked Cod	....	3	261.250	Beef Enduladas	....		.800
Snapper	....		35.000	Pickles	....	8.600	ml
Hake	....		135.000	Sweet Gherkins	....		2.000
Cod	....		.875	Pickled Scallions	....		15.000
Crumbed Fish	....		6.000	Sukiyaki	....		2.000
Black Bream	....		13.500	Seasoned Vegetables of			
				Fish	....		5.000
Prawns Frozen	....	4	100.280	Alimentary Paste	....		4.900
Fish Dried—Bombay Duck				12.500	Dried Goods—		
Canned Food—					Dates	....	309.450
Fish—					Figs	....	28.500
Smoked Oysters	....	18.140			Apricots	....	505.000
Sardines	....	9.255			Noodles	....	20.000
Fish (Tinned)	....	18.750			Japanese Plums	....	1.000
Pink Salmon	....	13.960			Alimentary Paste	....	.500
Smoked Mussels	....	1.365		Nuts—			
Fish Pudding	....	.850		Walnuts	....		149.500
Oyster Sauce	....	4.725		Walnuts (Shell on)	....	2	500.000
Tuna	....	.800		Hazelnuts	....	1	027.000
Mackerel Fillets	....	1.500		Edible Oil—			
Anchovies	....	11.000		Olive	....		119 litres
Herrings	....	7.525		Vegetable	....		10 litres
Boiled Mussels	....	8.000		Sundry Items—			
Vegetables—				Chick Peas (Bags)	....	406.780	
Tomatoes	....	422.230		Fish (Drums)	....	240	litres
Asparagus	....	169.365		Biscuits	....	4.300	
Mushrooms	....	572.789		Pastes—Chutneys—Sauces—			
Champignons	....	2	475.170	Wine Sauerkraut (Bottled)		3	000 ml
Artichokes	....	25.500		Olives (In Brine)	....	878.000	
Bamboo Shoots	....	6.720		Soya Sauce	....	25	litres
Black Beans	....	10.000		Indian Curry and Chutney		77.165	
Bean Curds	....	4.000		Canned Fruit—			
Mandarin Oranges				35.960			
Plums				25.420			
Mango Sliced				3.510			
Cherries				11.900			

Special projects relating to food, which are a continuing activity, conducted under the auspices of the National Health and Medical Research Council, and in co-operation with the Food and Nutrition Officer (Mr. J. R. Edinger) include—

1. Monitoring of mercury levels in fish: A total of 149 samples of local fish were submitted for analysis, and 13 sharks with a total weight of 307·5 kg were condemned and destroyed for excess mercury content: A total of 87 samples of various imported fish were submitted for analysis, which other than a consignment of New Zealand Snapper which was prevented from off-loading, showed acceptable limits.
2. Sampling of predetermined types of food, at predetermined times for assessment of pesticide residuals and heavy metals.
3. Participation in a National Food sampling programme aimed at determining and prescribing microbiological standards for certain foods.

Other matters of a new or continuing nature relating to food include—

1. Investigation of compositional standards of coffee and tea.
2. Investigation relating to the presence of Erucic acid and vinyl chloride monomer in cooking oils.
3. Sampling programme aimed at determining permissible levels of sulphur dioxide in sausage casings.
4. Sampling programme of bulk milk to determine compliance with prescribed standards of solids not fat content.
5. Examination of various crayons, finger and poster paints, and similar articles, intended for use by children, for presence of lead and other potentially harmful ingredients.

Liquor

A total of 1 108 visits were made to licensed premises during the year made up of 831 metropolitan and 277 country, including special occasions e.g. Oktoberfest, wine festival etc.

Each visit involved an examination of the structural conditions of the premises, basic sanitation, food handling and storage, hygiene of personnel and sampling of liquors and fermented beverages for compliance with prescribed standards.

As a consequence of these visits sixty two requests were made for cleaning of coolrooms and beer lines, twenty two for improved storage of food stuffs, and one hundred and thirteen for provision of blue dye in drip trays.

Twelve complaints made by individual members of the Public against the conduct or conditions at specified licensed premises were investigated and corrective action taken; and successful legal proceedings were taken on 13 other situations for continued non-compliance with the prescribed standards.

Details of Licensed premises examined, and details of spirits tested and samples taken are as follows:—

				Current Licences			Inspections		
				Town	Country	Total	Town	Country	Total
Hotel	....	....	....	144	264	408	258	163	421
Tavern	....	....	....	81	72	153	131	37	168
Limited Hotel	....	....	....	16	7	23	28	4	32
Winehouse	....	....	....	11	1	12	23	1	24
Cabaret	....	....	....	22	3	25	21	....	21
Restaurant	....	....	....	86	29	115	106	18	124
Theatre	....	....	....	3	....	3	....	....	....
Club	....	....	....	135	169	304	204	50	254
Club—Unlicensed	....	....	....	21	64	85	....	....	....
Packet	....	....	....	4	....	4	....	....	....

Canteen	1	31	32	1	1	2
Australian Wine License	12	6	18	3	....	3
Store	182	131	313	15	3	18
Wholesale Wine Spirit	49	17	66	15	....	15
Brewers	3	1	4	....	....	....
Function Permit ....	....	....	....	18	....	18
Catering ....	....	....	....	4	....	4
Others ....	....	....	....	4	....	4
	770	795	1 565	831	277	1 108

Liquor Testing

The following spirits were tested during visits to licensed premises.

Spirits Tested					Imported	Australian
Whisky ....	....	....	....	....	2 676	781
Brandy ....	....	....	....	....	173	1 534
Rum ....	....	....	....	....	881	762
Gin ....	....	....	....	....	451	497
Vodka/Ouzo ....	....	....	....	....	78	818
Other Spirits ....	....	....	....	....	189	54
					4 448	4 446

Liquors submitted to the Government Chemical Laboratories for determination of spirit strength and “true to label” examinations.

Whisky/Bourbon ....	....	....	....	Imp.	11
Whisky ....	....	....	....	Aus.	4
Brandy ....	....	....	....	Imp.	6
Brandy ....	....	....	....	Aus.	7
Rum ....	....	....	....	Imp.	2
Rum ....	....	....	....	Aus.	9
Gin ....	....	....	....	Imp.	1
Vodka ....	....	....	....	....	....
Beer ....	....	....	....	....	12
Malt Beverage ....	....	....	....	....	1
Cocktail Mix ....	....	....	....	....	1
Liqueur ....	....	....	....	....	5
Cider ....	....	....	....	....	2
Wines ....	....	....	....	Aus.	29
Wines ....	....	....	....	Imp.	16
					106

The Officers of this Branch are again indebted to the professional advice and assistance given by the Departments Food and Nutrition Officer, Mr. J. R. Edinger, in matters relating to the food and liquor activities.

10. Public Buildings

This is an on-going specialised area of Branch activity involving examination of plans for new proposals, alterations and extensions to existing buildings, “on-site” inspections during the constructional stages and liaison and discussion with the involved Architects, Engineers and Builders.

During the year, three hundred and twenty one proposals were examined and supervised, representing a total value of \$35 000 000.

Projects examined included Hospitals, Schools, Public Swimming Pools, Kindergartens, Churches and Night Clubs: Major activities included the construction of a new four hundred seat cinema at Fremantle, and extensive extensions to the Building complex at Murdoch University and the Western Australian Institute of Technology.

In the interests of Public Safety, closure orders were served on two buildings during the year, the first being a Public Hall where deterioration had resulted in structural instability, and the second, a City Night Club, which had consistently failed to comply with specified conditions relating to correction of fire hazards and provision of escape facilities: The premises was allowed to re-open following completion of the required work.

The routine examination of electrical conditions in existing Public Buildings commenced the previous year was maintained, emphasis again being given to the type of establishment which caters to the public with meals, dancing and entertainment: Where defects were found in wiring or installations, action to rectify was instigated, and in most instances the Proprietors of the establishments readily co-operated when the necessity for the required work was explained.

During the year fires occurred in seven premises classified as Public Buildings, and in each instance the cause, extent of damage, public risk and compliance with fire protection requirements were investigated in company with officers of other affected authorities.

In each case the building was found to be constructed to prescribed fire protection standards which had assisted to confine the fire, and reduce the public risk; as a consequence there were no deaths, or injuries.

Only ten new public swimming pools were constructed during the year, which allowed the State wide survey of existing public swimming pools commenced the previous year, to be continued. The survey includes the examination of the standards of hygiene and sanitation, the methods of storage of chemicals, water purity and methods of testing of water quality. Corrective action is taken where deficiencies are noted, and instructing of pool attendants given where necessary.

Other matters relating to Public Buildings activities included:—

- (a) The completion of testing under controlled conditions of silver-ion water sterilisation methods for private pools.
- (b) Promoting the use of the Palins D.P.D. method of pool water testing to give effect to the National Health and Medical Research Council recommendation to introduce alternatives to the use of orthotolodine.
- (c) The training and examination of swimming pool attendants on behalf of the National Safety Council.
- (d) Lecturing various formal and Ad hoc groups on matters relating to Public Buildings, and attendance at relevant meetings.

11. Caravan Parks and Camping Ground

During the year, twenty seven new parks were established; five in the metropolitan area, nineteen in the South West Division and three in the Pilbara, bringing the total of established parks in the State to two hundred and fifty three.

Plans of all new parks were examined and on site meetings and discussions held with developers to advise and assist in layout and provision of facilities, and in accordance with the "priority for attention" scheme previously evolved, most all existing parks were visited at least once, to ensure proper standards were being maintained and to advise on corrective measures.

Caravanning continues to grow in popularity as a form of recreation; there is increasing use of the larger self contained type of van, (during 1976, 14 per cent of all vans sold in the State were in this category) and the sealing of the Eyre Highway appears to have resulted in an increase in inter-state caravanning visitors.

The resultant health hazards arising from over-crowding, malfunctioning facilities, illegal use of Crown Lands and occupancies of a permanent or semi-permanent nature, continue to cause concern and during the year the working party established the previous year to examine these and other matters relating to the control and conduct of caravan parks, commenced its activities.

The Working Party, comprised of representatives from the Departments of Health, Tourism, Lands and Local Government was formed late in 1975, following a meeting convened by the Commissioner of Public Health with heads of the affected Departments, held its first meeting in February and in all 7 meetings were held during the year.

The Committee's investigations, while still continuing by the end of the year, were sufficiently advanced to enable the Committee to express its conclusions in an interim report, and to form guidelines for its activities for the forth coming year: It is anticipated that the Committee will be able to present its final report and recommendation to the Commissioner of Public Health by the end of 1977.

12. Land Suitability

Proposed residential subdivisions, and other proposed land usage examined at the request of the Town Planning Department numbered 533 for the year made up as follows:—

Metropolitan	....	....	....	343
Country	....	....	....	136
Area Surveys	....	....	....	18
Appeals	....	....	....	36
				<hr/>
				533
				<hr/>

Other land examined included 23 requests from Local Health Authorities relating to Town Planning or zoning schemes, seventy requests relating to change of usage or impact of classification under the Strata Titles Act and fourteen appeals relating to Health Act requirements.

As in previous years each proposal was individually examined, the ground water pattern established, and the suitability or otherwise of the land for the proposed purpose determined.

Where circumstances dictated the required treatment of the land was specified.

The extension of this activity to include investigation of proposed use of land in water catchment areas or adjacent to water contour channels, commenced the previous year was continued: During the year land in this category was examined at Yunderup, Peel Inlet, Lake Preston, Murray and Australind.

13. Septic Tanks and Sewerage Systems

A total of 8 664 plans were examined and approved during the year.

This was an increase of approximately 900 applications on the number received during the 1975 period.

The 1976 figure for applications indicates that there has been a levelling off of septic tank applications since 1971. Prior to that year and between 1967 and 1970 the application numbers exceeded the 10 000 mark with the peak being reached in 1968 when a total of 16 090 applications were approved.

The increasing use of deep sewerage as a pre-requisite for development and the growing tendency in rural towns to provide localised sewerage systems to overcome on-site effluent disposal problems are contributing factors to the decline in use of septic tank systems.

During 1976 approval was given for the provision of six new sewerage systems in country towns.

A conditional approval has also been given during this period for the installation of approximately sixty fibreglass septic tanks and appurtenant light weight construction leach drain segments.

These systems are being installed under Departmental supervision in a new community development which is being established for a limited term in an isolated northern mining area.

The structural condition of the systems and their operation will be regularly monitored during the tenancy period of the community in order to establish guide lines for the possible future use of fibreglass units.

Even so at this stage it is considered that there are limitations to their use.

A number of proposals for improved types of septic tank effluent disposal units were examined and long term testing arrangements made in order to assess their effectiveness.

A variety of chemicals and additives formulated for use in septic tanks and soil lines were tested throughout the year.

14. Chemical Closets—Bore Hole Latrines

A continuing surveillance was kept on the growing use of chemical closets in a variety of situations.

In response to a request from an industrial sector of the community special investigations were instituted to determine whether it was necessary to legislate for the sole use of chemical closets in lieu of other temporary sanitary facilities in an on-site working situation.

It was concluded that such action would be unwarranted as bore hole privies and chemical closets are prone to the same unsatisfactory conditions complained of, if not regularly maintained.

A new development aimed at providing flushing facilities to bore hole units was also examined during the year and results to date indicate that with further improvement, these facilities could assist in overcoming the aesthetic objections to the existing units.

15. Community Wastes

Subsequent to the publication of the Departmental report on "Community Wastes in the Perth Metropolitan Region" the Metropolitan Refuse Disposal Planning Committee requested the Department to prepare draft Legislation, which would give effect to the recommendation contained in the report that "There shall be formed a Statutory Waste Disposal Authority".

The draft Legislation was received by the Committee late in 1975, and distributed to Local Authorities for comment early in the current year.

In 1974, following the distribution of the Departmental report, the written responses received from Local Authorities had indicated that a majority contributed to the concept of a Statutory Authority: The responses received following distribution of the draft Legislation however showed that there had been a marked change in attitude, with most now expressing opposition: A situation which was confirmed by the results of independent surveys conducted by the Local Government Association and the Metropolitan Regional Planning Authority.

As a consequence the proposal to form a Statutory Authority was not proceeded with; but to allow co-ordinated planning of matters relating to community wastes the State Cabinet approved an alternative proposal recommended by the Metropolitan Refuse Planning Committee to replace the existing Metropolitan Refuse Disposal Planning Committee with a Waste Disposal Advisory Committee with the Commissioner of Public Health as Chairman and comprised of elected members of Local Government: This Committee to be supported by a Technical Committee comprised of Departmental and Local Government Officers who had particular expertise in the area of community wastes.

The alternative proposals were acceptable to Local Government, and by the end of the year both Committees had been formed, and the first meetings for each planned for February in the forthcoming year.

Other matters relating to Community wastes included:—

- (a) Examination of a proposal for the large scale treatment of liquid wastes.
- (b) Examination of proposals for the treatment of solid wastes by pulverisation or baling.
- (c) Investigation of proposed new land fill sites with regards to suitability of purpose and impact upon ground water reserves.

16. Royal Agricultural Show

Activities relating to supervision of the Environmental Health Aspects of the Show Grounds commences several weeks prior to opening and continues during the

period of Public attendance, with Departmental Officers in attendance during the entire period of the function.

Aspects supervised include standards of hygiene and food handling and liquor premises, hygiene of personnel and public safety of exhibits and side shows.

The arrangement between the Department and the Royal Agricultural Society which provides for a license to a food stall holder to be issued by the R.A.S. only after compliance with specified Health Standards is bringing about considerably improved standards.

During the year three new premises of satisfactory standard were constructed and a tea room premises which because of structural deficiencies had been an area of concern, was demolished, and new high standard premises erected.

Other activities included:—

- (a) The introduction of the use of head coverings for persons engaged in the handling of food.
- (b) Examination of methods of providing toilet accommodation for the disabled, an activity commenced the previous year in co-operation with the R.A.S.

It is anticipated that progress in this aspect will be achieved before the 1977 Show.

17. Pest Control

While the essential function of this section is pest control treatment of Government and semi-Government buildings, which is a continuing activity, the officers of the section are also responsible for advising Local Authority Officers, the private sector and others on specific control measures for pest eradication.

Routine inspections relating to fly control to measure efficiency of recommended control measures included 96 of Government Hospitals and Institutions, 208 of skin drying sheds, 86 of metropolitan abattoirs, 55 of railway truck washing yards and 54 of Sewage treatment works.

Other activities included:—

- (a) Testing of new formulations of pest control chemicals.
- (b) Training of Local Authority and Hospital employees in pest control procedures.
- (c) Training of mature age fly control officers for employment, by Local Authorities during the periods of the fly eradication programme.

Details of specific pest control treatments are as under.

Summary for year ending 31st December 1976

Total number of fly control inspections	....	....	....	499
Total number of insecticidal treatments	....	....	....	659
Total number of rat bait placements and bi-weekly inspections				391

There were 38 insecticidal treatments during weekends for the year.

No. of Cases									
Rodent	....	....	....	....	388	Pigeon	....	....	20
Cockroach	....	....	....	....	307	Pigeon Mite	....	....	7
Termite	....	....	....	....	66	Fly	....	....	15
Red Back Spiders				....	79	Bed Bugs	....	....	6
Mosquito	....	....	....	....	7	Sand Fly	....	....	3
Silverfish	....	....	....	....	34	Weevil	....	....	6
Wasp	....	....	....	....	9	Fly Larvae	....	....	2
Crab Louse	....	....	....	....	1	Cricket	....	....	2
Cat	....	....	....	....	3	Millipedes	....	....	4
Bee	....	....	....	....	28	Odour Control	....	....	1
Flea	....	....	....	....	21	Scorpion	....	....	1
Ant	....	....	....	....	43				

18. Details of some other routine and special Investigations Conducted During this year

- 1. Investigations of Statutory appeals and complaints made to the Commissioner of Public Health.
79 Appeals; 303 Complaints.
- 2. Regular supervisory visits to Country Local Authorities.
- 3. Regular visits to the East Pilbara and Eastern Goldfields mining Town sites.
- 4. Investigations and introducing of control measures for outbreaks of dysentery type diseases in metropolitan and Country districts, cases of psittacosis and infectious disease.
- 5. Investigations on behalf of Commonwealth Health Authority of contacts of Typhoid cases arriving from overseas.
- 6. Regular inspections of Perth Airport on behalf of the Department of Civil Aviation and all food handling premises under the control of State Government Authorities.
- 7. Attendance of meetings and conferences on behalf of the Commissioner of Public Health both locally and Interstate. Lecturing of Environmental Health students and nurses, and various formal and informal groups.
- 8. Continuing activities commenced the previous year include:—
 - (a) Regular sampling of community water supplies not under the direct control of the Metropolitan Water Board and Country Water Supply.
 - (b) Special survey of Public Health Standards of all Schools throughout the State. 76 Schools were examined.
 - (c) Establishing construction standards for Transportable Houses.
- 9. *Continuing Activities included:—*
 - (a) Supervision of hygiene Standards at Rottnest Island and comprehensive water sampling programme of swimming areas to determine nature and extent of pollution.
 - (b) The spring/autumn annual fly control programme, involving co-ordination of Local Authority activities and training of fly control officers.
(Details of current programme attached as Appendix B).
 - (c) Special survey of all schools throughout the State to determine structural and Public Health Standards. 76 Schools were examined.
 - (d) Special investigations relating to the recreational use of water catchment areas on behalf of the Water Purity Committee.
 - (e) Regular sampling of Country water supplies.
- 10. *Routine Sampling Activities included:—*
 - Bacteriological*

Ocean samples (coliform)	....	....	....	1 022
Lake samples (coliform and salmonella)	....	....	....	72
River samples (coliform)	....	....	....	456
National Parks (coliform and salmonella)	....	....	....	116
 - Miscellaneous*

Domestic water supplies (coliform)	....	....	....	71
Public swimming pools (coliform)	....	....	....	24

Appreciation

My appreciation is again expressed to a loyal and hard working staff who were responsible for the above activities.

APPENDIX A
MEAT INSPECTION FOR THE YEAR ENDED 31st DECEMBER, 1976

Abattoir and Type of Stock Slaughtered	Stock Slaughtered	Carcases Condemned										Part Carcases Condemned						Organs Condemned							
		Tuberculosis	Actinomycosis	Emaciation	Piroplasmosis	Pleuro-pneumonia	Caseous Lymph-Adenitis	Para-typhoid	Traumatic and Septic	Other Abnormalities	Total	Actinomycosis	Caseous Lymph-Adenitis	Tuberculosis	Arthritis	Other Abnormalities	Total	Actinomycosis	Echinococcus Granulosis	C. Ovis	Hydatids	Tuberculosis	Other Abnormalities	Total	
MIDLAND—		50	4				5 471		216 1 007 139	160 25 076 457	430 31 554 596	905	7 709		2 3 338 720	46 71 303	953 11 118 1 028	5 124	121 246 ...					24 885 680 135 42 272	30 130 680 381 42 272
ROBBS JETTY—																									
Cattle and Calves	100 719	5	3				3 917		59	69	136	452			135	1 805	2 392	415	103					3 169	3 687
Sheep and Lambs	927 785									11 974	15 891				4		4		167					92 105	92 272
WATSONS—																									
Pigs	115 303	1			4		1	6	83	597	692				14 087	2 228	16 315						14 151	14 151	
ANCHORAGE—																									
Cattle and Calves	3 645																								
Sheep and Lambs	48 587																								
COUNTRY DISTRICTS*—																									
Cattle and Calves	292 947	2	2	34			343		83	168	289	95	1 035		69	765	930	113		1	149		11 301	11 564	
Sheep and Lambs	1 060 843			558					432	443	1 776				1 300	541	2 876			2 980	670		35 220	38 870	
Pigs	78 496			16				22	137	121	296		10	1	241	247	499					10	4 710	4 720	
Goats	11 068																								
TOTAL STATE—																									
Cattle and Calves	460 894	57	9	34			9 731		358	397	855	1 452	8 744		206	2 617	4 275	5 652	224	1	149		39 355	45 381	
Sheep and Lambs	2 213 205			558					1 439	37 493	49 221				4 642	612	13 998		413	2 980	670		807 460	811 523	
Pigs	321 258	1		16	4		1	28	359	1 175	1 584		10	6	15 048	2 778	17 842					10	61 133	61 143	
Goats	11 068																								

NOTE: Country abattoirs included—
 *Albany, *Boulder, Boyup Brook, Bridgetown Greenbushes, Bunbury, Busselton, Carnarvon, Dardanup/Capel, *†Denmark, Esperance, Gingin, Greenough, Harvey, *Katanning, Kojonup, Manjimup, Merredin, *Moora, Narrogin, Northam, Plantagenet, †Port Hedland, Tammin, Toodyay, Wagin, Waroona, *Wongan-Ballidu, Woodanilling.
 * Only figures for stock slaughtered, no condemnation figures received.
 † Denmark and Port Hedland figures are for only half the year.

APPENDIX B

METROPOLITAN FLY CONTROL PLANNING COMMITTEE

(Summary of 1976/77 Campaign)

Report of Fly Control Officers Employed and Premises Inspected during both Phases of 1976/77 Campaign

Local Authorities Participating	....	....	....	....	....	....	....	13
Students Employed	....	....	....	....	....	....	....	7
Mature Aged Persons Employed	....	....	....	....	....	....	....	33
Premises Visited	....	....	....	....	....	....	....	68 199
Premises Inspected	....	....	....	....	....	....	....	61 167
Premises Breeding Flies	....	....	....	....	....	....	....	3 042
Breeding Sites								
Rubbish Bins	....	....	....	....	....	....	....	% 49.9
Buried Food Wastes	....	....	....	....	....	....	....	6.3
Poultry Keeping	....	....	....	....	....	....	....	2.3
Incinerators	....	....	....	....	....	....	....	1.4
Mulch	....	....	....	....	....	....	....	3.1
Compost Heaps	....	....	....	....	....	....	....	11.4
Blood and Bone	....	....	....	....	....	....	....	0.2
Animal Manure	....	....	....	....	....	....	....	2.6
Poultry Manure	....	....	....	....	....	....	....	3.2
Lawn Clippings	....	....	....	....	....	....	....	19.5
Other	....	....	....	....	....	....	....	0.1
Comparative Figures of Breeding								
1961/62	....	....	....	% 22.3	1969/70	....	....	% 8.1
1962/63	....	....	....	23.5	1970/71	....	....	7.9
1963/64	....	....	....	10.0	1971/72	....	....	6.7
1964/65	....	....	....	10.0	1972/73	....	....	5.0
1965/66	....	....	....	9.4	1973/74	....	....	6.0
1966/67	....	....	....	7.9	1974/75	....	....	4.5
1967/68	....	....	....	6.7	1975/76	....	....	4.8
1968/69	....	....	....	9.0	1976/77	....	....	5.0

FLY CAMPAIGN (BOTH PHASES) 1976/77
(Summary of Results)

Local Authority	No. of Persons Employed	Total Time of Employment— (In Weeks)	No. of Premises Visited	No. of Premises Inspected	No. of Premises where Breeding found	No. of Breeding Places found	Rubbish Bins	Buried Food Wastes	Poultry Keeping	Incinerators	Mulch	Compost Heaps	Blood and Bone	Animal Manure	Fowl Manure	Lawn Clippings	Other
City of Perth	12	264	24 589	23 291	1 139	1 311	698	105	5	22	31	121	4	31	72	222	...
City of Stirling	4	24	3 526	2 747	325	346	152	31	12	4	23	35	2	8	3	76	...
City of South Perth	2	28	2 698	2 598	120	149	39	9	13	2	5	35	1	10	5	30	...
City of Melville	7	70	10 405	10 111	496	510	195	22	9	11	13	81	...	9	2	168	...
City of Subiaco	3	30	4 733	4 349	99	99	52	4	1	...	11	14	...	7	...	8	...
City of Nedlands	2	28	4 818	4 748	64	64	24	...	2	...	...	16	...	...	...	20	2
Town of Canning	1	10	1 706	871	43	43	1	3	...	...	9	9	...	4	...	17	2
Town of Mosmans	1	4	1 469	1 385	27	27	18	3	2	1	...	3	...	...	...	...	...
Shire of Belmont	2	10	3 388	1 688	170	170	28	21	32	4	...	30	1	...	...	53	...
Shire of Kalamunda	1	8	2 506	2 386	317	317	280	...	...	...	...	16	...	6	9	6	...
Shire of Peppermint Grove	1	2	399	382	8	8	4	...	...	...	...	2	...	...	...	2	...
Shire of Rockingham	2	26	4 034	3 710	154	154	92	7	...	...	6	6	...	...	9	26	...
Shire of Wanneroo	2	29	3 928	2 901	80	80	52	...	...	2	3	7	...	2	5	10	1
Total	40	533	68 199	61 167	3 042	3 278	1 635	205	76	46	101	375	8	84	105	638	5

METROPOLITAN FLY CONTROL PLANNING COMMITTEE—FLY CAMPAIGN 1976/77
(Comparison with 1975/76—Both Phases)

	No. of Premises Inspected		No. of Houses Breeding Flies		Percentage of Houses Breeding Flies	
	1975/76	1976/77	1975/76	1976/77	1975/76	1976/77
City of Perth	23 671	23 291	1 229	1 139	5.2	4.5
City of Stirling	2 666	2 747	234	325	8.8	11.6
City of South Perth	1 788	2 598	67	120	3.7	4.6
City of Melville	11 384	10 111	590	496	5.2	4.9
City of Subiaco	4 140	4 349	251	99	6.1	2.5
City of Nedlands	2 714	4 748	44	64	1.6	1.3
Town of Canning	1 242	871	9	43	0.7	4.9
Town of Mosmans	749	1 385	21	27	2.8	1.9
Shire of Belmont ....	....	1 688	....	170	....	10.1
Shire of Kalamunda	3 663	2 386	233	317	6.4	13.3
Shire of Peppermint Grove	272	382	6	8	2.2	2.1
Shire of Rockingham	3 443	3 710	130	154	3.8	4.2
Shire of Wanneroo	2 233	2 901	42	80	1.9	2.7

STATISTICAL SUMMARY OF ANNUAL FLY CAMPAIGN 1976/77
(Figures Brought Forward from 1968/69)

Year	Number of Local Authorities		No. of Vacancies	Total No. of Weeks	No. of Premises Inspected	No. of Premises Visited	No. of Premises Breeding Flies	Percentage of Houses Inspected Breeding Flies	No. of Breeding Places Found
	Metro-politan	Country							
1969/70	14	1	41	327	40 643	52 688	3 303	8.1	3 481
1970/71	16	1	35	343	51 121	61 080	4 050	7.9	4 539
1971/72	16	....	35	440	66 487	75 895	4 477	6.7	4 737
1972/73	16	....	42	564	75 133	86 051	3 728	5.0	4 066
1973/74	15	1	41	564	69 787	76 750	4 154	6.0	4 369
1974/75	16	....	51	625	78 504	89 051	3 545	4.5	3 818
1975/76	14	....	40	551	61 419	70 350	2 938	4.8	3 140
1976/77	13	....	40	533	61 167	68 199	3 042	5.0	3 278

Food and Nutrition Section

J. R. Edinger, B.Sc. A.R.A.C.I.

Food and Nutrition Officer

1. GENERAL

The year 1976 will have some particular historical value where food is concerned for the next decade. It was in this year that by agreement at a Health Minister's annual conference the proposition for a Uniform Food Law in Australia was launched. State food and legal officers attended a Uniform Food Law Working Party Meeting in Canberra. Basic working guide lines were established including the formation of a small group of State representatives, one from each State, named aptly enough the 'Food Law Revision Task Force' which met in June. Each State member actively participated and a basic rough draft was compiled for further amendment, modification and further additions as required. A most difficult task had commenced and it is still extremely difficult to realise the enormity of the whole project.

It is anticipated that further meetings will take place of both Committees in 1977 and subsequent years. The benefit of a Uniform Food Act to States accompanied by Uniform Food Regulations made under this Act would be incalculable.

Plastic packaging materials of the film type and rigid containers received further press publicity due to contaminants either inherently included or added to their composition. Two meetings were attended of the Standards Association of Australia's Committee C/S 13 specially formed to produce Standards for the plastics for food contact materials, polyvinyl chloride and polyethylene. It is anticipated that these should be published in mid 1977.

Two meetings of the National Therapeutics Goods Committee were attended and the main item amongst many others was the possible formation of a National Therapeutics Goods Register.

2. SAMPLING PROGRAMMES, INVESTIGATIONS AND ALLIED WORK

In line with the previous year about three thousand food samples were taken by officers of the Food Section of the Health Surveying Branch. These samples were comprised of complaints, routine samples and special sampling programmes.

A detailed segregation of these samples enumerating type and number is given in the Chief Health Surveyor's report under the Food and Liquor Section. For this reason only items which have been of particular importance are detailed hereunder.

2.1 Desiccated Coconut

Following up the work which had been carried out in the various factories in the Philippines to improve quality control and prevent contamination, some two hundred samples were checked from various consignments over the year. All samples proved to be of good quality by analysis and it has been decided to do only limited spot sampling in 1977 as it appears the initial problems have been overcome in the various factories in the Philippines.

2.2 Rape Seed Oil

Various samples of rape seed oil were analysed for erucic acid content and a survey of the amount used in Western Australia carried out. All samples of Margarine examined for erucic acid content gave negative results.

2.3 Prawns

Considerable work has been carried out within the Department to establish a microbiological standard for prawns which can be put to practical use mainly in the quality assessment of imported prawns. This has proved to be a most difficult project but a standard is now nearing completion.

2.4 Meat Standards

In conjunction with the Local Health Authorities Analytical Committee an approach was made to the National Health and Medical Research Council's Food Standards Committee to prohibit the use of nitrates, and reduce the amount used of nitrites in the usual types of manufactured meats.

2.5 Frozen Foods

By a co-operative effort involving all sections of industry and government a "Code of Practice for the Processing, Transport, Handling, Storage and Sale of Frozen Foods" was evolved and adopted by the Western Australian Food and Drug Advisory Committee, late in the year. It will be published in 1977 and should prove to be a valuable guide to everyone associated with handling and selling frozen foods.

2.6 Pesticides Residues in Food

A new comprehensive regulation based on the National Health and Medical Research Council's Standard was gazetted in August.

2.7 Fruit Juices

Routine samples were taken and analysed in a continuation of the previous year's activities.

2.8 Market Basket Surveys (Metallic and Pesticide Contaminants in Food)

As previously, four quarterly purchases of foods as prescribed by a detailed sampling list supplied by the National Health and Medical Research Council, were made by a combined operation involving State and Commonwealth Officers, to estimate the levels of metallic and pesticide contaminants. The results are made available to State Departments of Health by the National Health and Medical Research Council.

2.9 Plastic Materials for Food Contact Use

Planned programmes for sampling vegetable oils packed in polyvinyl chloride containers were carried out and the vinyl chloride monomer estimated when present. The latest samplings showed a decrease in the monomer content of the oils and all oils in fact were found to be satisfactory.

Research showed that by gentle heat being applied to the oil as in a deep cooker or fryer that within a few minutes the vinyl chloride monomer was undetectable by analysis thus eliminating any possible danger to health.

2.10 Milk—Compositional Standard

One of the major achievements of the year was an amendment to the compositional Standard for milk after an intensive and extensive investigation in which the Dairy Industry Authority, Department of Agriculture, producers, suppliers and Local Health Authorities all participated. It proved to be an excellent example of co-operation between parties with sometimes diametrically opposed opinions finally making a decision which was eventually satisfactory to all.

3. **WESTERN AUSTRALIAN FOOD AND DRUG ADVISORY COMMITTEE MEETINGS**

Six meetings were held during the year and many items were discussed.

Important amendments to the Western Australian Food and Drug Regulations included those to, Pesticides, Milk, Prescribed levels for vinyl chloride monomer in rigid containers, films and in food, and to the meat inspection and branding regulations.

4. **APPRECIATION**

The past year has once again illustrated the excellent co-operation which has existed in this Department, leading to efficient working in all facets of food sampling, investigation and culminating in correct action where necessary. My thanks are tendered to the Chief Health Surveyor Mr. J. F. Slattery for the help offered either personally or through members of his staff, in particular Mr. G. E. Kaiser, who has so ably led his small, often inadequate staff in the Food and Liquor Section.

Appendix XV

Statistics Branch

Marlene M. Lugg
M.T. Sc.D., M.P.H., F.H.A., F.A.P.H.A., F.R.S.H.
Health Statistician

HOSPITAL MORBIDITY STATISTICS

GENERAL

The Hospital Morbidity Statistics system has again been used widely throughout Western Australia by not only the Health Services but also individual hospitals and other organisations in their planning efforts. The quality of the system continues to improve and I would like to take this opportunity to again thank all hospital and medical personnel in public and private hospitals who have made the system possible by their continued excellent co-operation. Again special thanks also to the Australian Bureau of Statistics for their help with the Hospital Morbidity system and other general statistical collections for this branch.

TOTAL DISCHARGES

Although the 1976 total hospital discharges increased by 2·1 per cent from 1975 (257 800 to 263 142) the hospitalisation rate per 1 000 population dropped from 230 to 223. Admissions during which at least one operation was performed increased by 5·4 per cent over the previous year (125 446 to 132 211) thus continuing the trend over the past 6 years (see tables 6 and 13). Hospitalisation for accidental injury continued to drop slightly (31 212 to 31 007) for the second consecutive year.

The in-hospital death rate has again decreased to below 1974 levels (8 per 1 000 admissions from 10·6 in 1975 and 9 in 1974).

Hospital Discharge Rates W.A. 1971-76

Year	Rate per 1 000 Population		
	Perth	Rural	Total State
1971	169	278	205
1972	180	300	218
1973	182	308	222
1974	185	301	223
1975	195	306	230
1976	192	298	223

As in previous years, there has been almost no variation in hospitalisation patterns by disease, sex or age groups. Accidental injury continues to be the main reason for admission of males to hospital, followed by diseases of the respiratory system and the digestive system, in that order. For females, pregnancy and childbirth are still the main reason for hospital admission (in spite of a declining birth rate), followed by diseases of the genito-urinary system and supplementary classifications. Of course the pattern varies greatly by age groups (Tables 5 and 6). The overall leading cause of admission in Western Australia remains accidental injury.

LENGTH OF STAY

The Teaching hospitals continue to have the longest average stay at 9·1 days, Private hospitals having the shortest (6·7 days) and other Government and Board hospitals are between at 7·3 days. The mean length of stay for all hospitals has stabilized with the State mean now being 7·8 days, which may be an irreducible figure, considering today's medical care methods.

Mean Length of Stay by Type of Hospital W.A. 1971-76

				Mean Length of Stay (days)			
Year				Teaching	Govt. & Board	Private	All Hospitals
1971	....	....	....	10.6	8.1	7.4	8.7
1972	....	....	....	10.1	7.9	7.0	8.3
1973	....	....	....	9.6	7.7	7.0	8.1
1974	....	....	....	9.5	7.6	6.7	8.0
1975	....	....	....	9.1	7.2	6.7	7.6
1976	....	....	....	9.1	7.3	6.7	7.8

The mean stay for operations dropped slightly to 6.8 days (from 7.0).

TYPE OF HOSPITAL

The overall distribution of patients by type of hospital remains almost constant between the Private, Government and Teaching hospitals, with a slight shift again towards the teaching hospitals (see below).

Distribution of Discharges by Type of Hospital W.A. 1971-76

				Type of Hospital		
Year				Teaching	Govt. & Board	Private
				%	%	%
1971	....	....	....	29.5	47.7	20.4
1972	....	....	....	29.2	47.4	23.4
1973	....	....	....	29.9	46.9	23.2
1974	....	....	....	30.7	46.1	23.2
1975	....	....	....	31.7	46.4	21.9
1976	....	....	....	32.4	47.0	20.6

SURGICAL OPERATIONS

Fifty per cent of all hospital discharges had at least one surgical operation during their hospital stay. This ranges from a low of 35 per cent in Government and Board hospitals to a high of 76 per cent in Private hospitals. In the Teaching hospitals 55 per cent of discharges had surgical operations. As in previous years, surgery on the abdomen is the main operation group for males followed by orthopaedic operations and operations of the urinary and genital organs. For females, surgery on the genital tract remains the leading type of surgical operation followed by obstetric operations and operations on the abdomen.

HOSPITALISATION AND VITAL STATISTICS

An interesting side effect of the lower birthrate is shown in Table 7 which shows a corresponding reduction of the birthrate per 1 000 females aged 15-44 and lower discharge rate for pregnancy and related conditions of the antenatal and post-natal period. Thus as the birthrate per 1 000 females has decreased from 113.2 to 82.7, the related hospital discharges have decreased from 142.6 to 110.5.

SERVICE TO OTHER PUBLIC HEALTH DEPARTMENT BRANCHES

The Statistics Branch continues to serve other Branches of the Public Health and Medical Departments in an advisory capacity.

A co-operative effort between the Statistics Branch, the School Health Section, the W.A. Education Department and the Health Statistician's students at W.A.I.T. resulted in a pilot survey of food intake and energy expenditure in a sample of first grade students throughout the state. As the survey was carried out during the later part of the year, results will not be available until 1977.

CO-OPERATION WITH OTHER GOVERNMENT DEPARTMENTS AND ORGANISATIONS

In addition to the nutrition and exercise survey mentioned previously, there are numerous *ad hoc* requests from other government departments for Statistics Branch advice and co-operation.

A major contribution continues in the Health Statistician's membership of the State Statistical Co-ordinating Committee, which as one of its major projects advised the Hon. Premier on the creation of new statistical divisions for W.A., which came into operation retrospectively on 1 January, 1976.

Co-operation with the Medical Board of W.A. resulted in a statistical questionnaire being incorporated with the annual re-registration of doctors in December. The results will be analysed and used as a basis for medical manpower planning in this State in 1977.

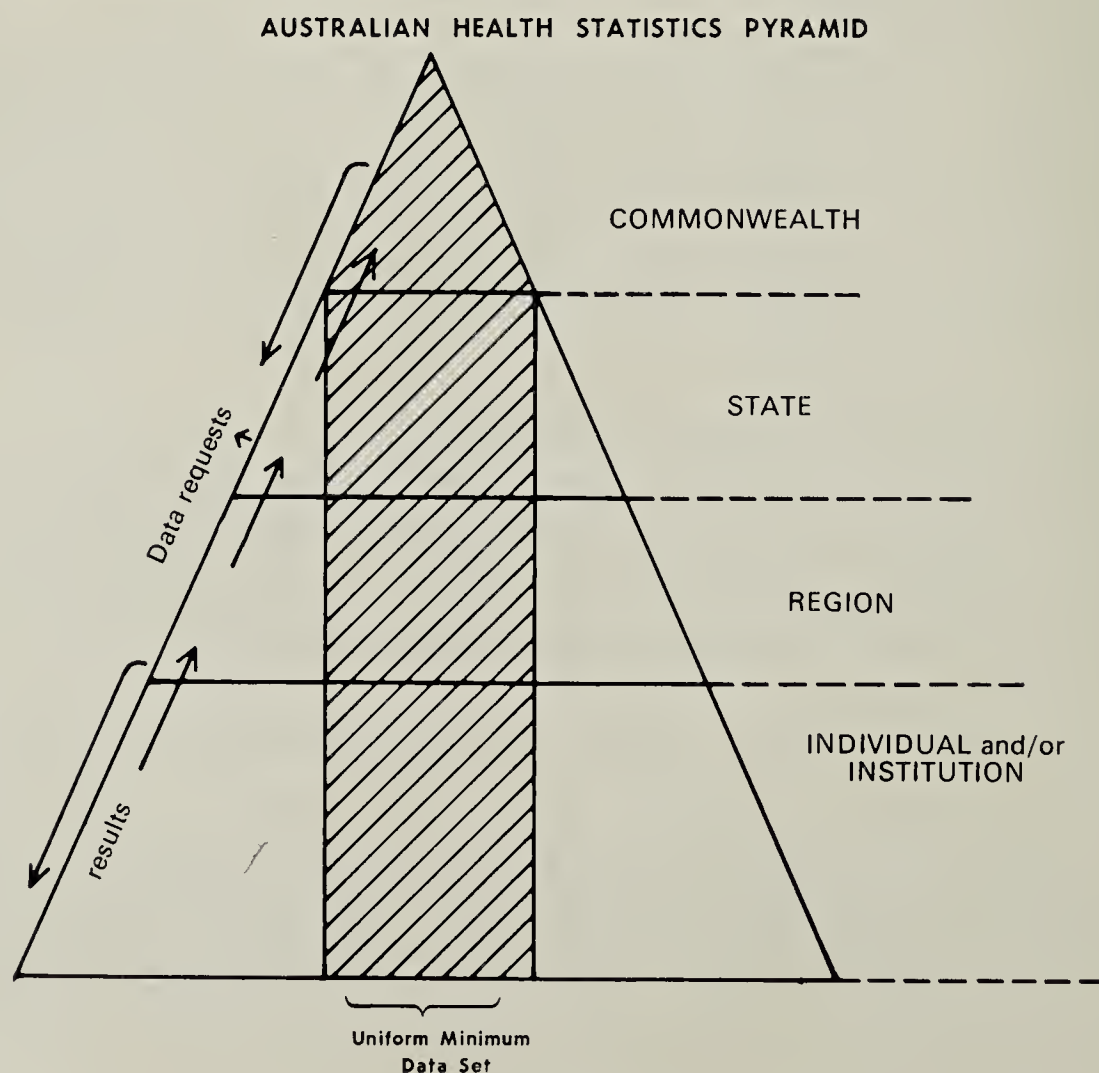
A similar system was designed last year for the Nurses' Registration Board—the results of which will be published elsewhere.

The Tasmanian and South Australian Health Departments sent officers to study the W.A. Cancer Registration and Mental Health Statistical Systems, for implementation in their states.

MEETINGS ATTENDED, REPORTS PRESENTED

The Health Statistician attended a special National Meeting on Health Statistics convened at the request of the Australian Health Ministers' Conference. A major recommendation of the meeting was acceptance of the W.A. Health Statistician's recommendation:

“The structure of the health statistics system can be likened to a pyramid. At the base there is the institutional or individual level where data requirements are most detailed. These requirements decline through the regional and then the State levels to the national level at the pyramid apex. Data would be collected and processed at the various levels of institutional, regional, state and national. Each level would be responsible for data collection, verification and processing to produce the statistics and information required at that level. As a by-product, the data required at higher levels would be passed upward. (See diagram below.)”



Subsequent to this meeting, the Australian Health Ministers also created a National Committee on Vital and Health Statistics, as recommended by the Health Statistician in 1975 and again by the National meeting in 1976. Its first meeting is scheduled for 1977.

The Health Statistician also attended a Hospital Medical Records Congress in Adelaide, the Australian Computer Conference in Perth (along with several members of her staff), and attended regular meetings of the HASAC Computer Committee, the NH & MRC Health Statistics Committee. She continues to serve on the W.A. Cancer Councils Leukaemia and Allied Disorders Committee, Epidemiology Committee, and Cancer Register Committee. In addition, she served as a member of the W.A.I.T. Panel to develop a degree course in Home and Consumer Studies.

OTHER ITEMS OF INTEREST

In addition to lecturing part-time at W.A.I.T. and the W.A. Medical School, the Health Statistician presented a Saturday seminar for the Royal Australian Nursing Federation, and conducted several small meetings to familiarise hospital medical records personnel with the Statistics Branch activities and needs.

She also lectured on the uses of statistics to Health Education students at Secondary Teachers College, and presented an in-service course to Community Health Services doctors. Acquainting suppliers and users of health services' data continues to be an important aspect of this Branch's work, in order that people realise what data is available and how to use it properly and effectively.

During this year, the Health Statistician, along with other senior officers of the P.H.D. appeared before the Senate Select Committee on Health and Welfare.

The Assistant Health Statistician was granted one year's leave of absence without pay in order to complete requirements for the Diploma of Epidemiology and Community Health at the University of Toronto (Canada). As no replacement officer was allowed, the Branch has been working under a definite handicap, however as no such course is available in Australia, and the Health Statistician is the only member of the Branch's research staff with a post-graduate public health degree, it is considered valuable to obtain this extra qualification within the Branch.

At the end of 1976, The Federal Minister for Health announced the awarding of a National Health and Medical Research Council Public Health Travelling Fellowship to the Health Statistician. During this 5 month fellowship, to be used during the 1977-78 financial year, Dr. Lugg will study health service and medical manpower planning with Dr. Milton Roemer of U.C.L.A. (California) and work as part of Dr. Ray Elling's inter-university team on Cross-National Studies of Health Systems, located at the University of Connecticut, U.S.A.

It has again been a busy year for the Statistics Branch, complicated by a shortage of staff, and the retirement of our exceptionally competent and devoted typist, Mrs. Anne Raynor, whom we wish a long and happy life. To all those staff members who gave that extra bit to make sure deadlines were met and accuracy maintained, many many thanks.

Hospital In-Patient Statistics for 1976

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TABLE 1
DISCHARGES FROM W.A. HOSPITALS 1976
SUMMARY BY AGE GROUPS AND LENGTH OF STAY (DAYS)

Description	Age Groups					
	0-4	5-14	15-44	45-64	65 and Over*	Total
ALL DISCHARGES—						
Number	27 772	26 608	124 757	49 483	34 522	263 142
Percentage of Total	10·6	10·1	47·4	18·8	13·1	100·0
Length of Stay	172 274	109 289	729 049	455 340	575 385	2 041 337
Percentage of Total	8·4	5·4	35·7	22·3	28·2	100·0
Average Length of Stay	6·2	4·1	5·8	9·2	16·7	7·8
OPERATION CASES ONLY—						
Number	5 971	13 440	72 100	27 363	13 337	132 211
Percentage of Total	4·5	10·2	54·5	20·7	10·1	100·0
Length of Stay	23 369	51 360	412 457	226 733	191 154	905 073
Percentage of Total	2·6	5·7	45·6	25·1	21·1	100·0
Average Length of Stay	3·9	3·8	5·7	8·3	14·3	6·8
EXTERNAL CAUSE (INJURY)—						
Number	3 563	5 299	16 295	4 742	3 434	33 333
Percentage of Total	10·7	15·9	48·9	14·2	10·3	100·0
Length of Stay	14 476	24 267	105 253	53 308	67 339	264 643
Percentage of Total	5·5	9·2	39·8	20·1	25·4	100·0
Average Length of Stay	4·1	4·6	6·5	11·2	19·6	7·9

* Includes ages not stated

TABLE 2
AGE SPECIFIC HOSPITAL DISCHARGES—W.A. 1970—1976*

Year	Age Groups							
	Under 15		15-64		65+		Total	
	Number of Discharges	Percentage of Total	Number of Discharges	Percentage of Total	Number of Discharges	Percentage of Total	Number of Discharges	Percentage of Total
1968	34 215	27·57	72 379	58·33	17 495	14·10	124 089	100
1969	39 926	27·65	83 262	57·66	21 212	14·69	144 400	100
1970	41 404	27·69	86 420	57·79	21 725	14·53	149 549	100
1971	49 399	23·37	135 516	64·12	26 434	12·51	211 394	100
1972	54 184	23·60	146 507	63·81	28 902	12·59	229 593	100
1973	55 087	23·18	152 036	63·98	30 511	12·84	237 634	100
1974	53 046	21·77	159 625	65·50	31 032	12·73	243 703	100
1975	54 330	21·07	170 237	66·04	33 233	12·89	257 800	100
1976	54 380	20·67	174 240	66·22	34 522	13·12	263 142	100

* Private hospitals not included prior to 1971

TABLE 3
DISCHARGES FROM W.A. HOSPITALS—1971-1976
SUMMARY BY AGE GROUPS

Description	Age Groups												Total	° change
	0-4		5-14		15-44		45-64		65 and over					
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*				
All Discharges—														
1971	25 898	245	23 501	114	99 412	218	36 104	194	26 434	347	211 349	205	N/A	
1972	28 426	261	25 758	124	107 007	228	39 500	209	28 902	371	229 593	218	+ 8·6	
1973	29 831	273	25 256	120	110 075	231	41 961	217	30 511	378	237 634	222	+ 3·5	
1974	28 128	259	24 918	117	115 514	234	44 111	224	31 032	373	243 703	223	+ 2·6	
1975	27 938	257	26 392	124	122 945	242	47 292	235	33 233	387	257 800	230	+ 5·8	
1976	27 772	266	26 608	120	124 757	239	49 483	243	34 522	366	263 142	230	+ 2·1	
Operation Cases Only—														
1971	5 294	50	12 176	50	49 458	108	18 063	97	9 177	120	94 167	91	N/A	
1972	5 828	53	13 019	62	56 274	120	19 860	105	10 536	135	105 517	100	+12·1	
1973	5 863	54	12 609	60	57 524	121	21 013	109	11 083	137	108 092	101	+ 2·4	
1974	6 202	57	12 783	60	61 968	126	22 752	116	11 403	137	115 108	105	+ 6·5	
1975	6 318	58	13 324	63	68 030	134	25 261	126	12 513	146	125 446	112	+ 9·0	
1976	5 971	57	13 440	61	72 100	138	27 363	134	13 337	141	132 211	115	+ 5·4	
External Cause (Injury)—														
1971	3 154	30	4 231	20	14 960	33	4 352	23	2 838	37	28 535	28	N/A	
1972	3 657	34	4 582	22	14 745	31	4 732	25	3 059	39	30 775	29	+ 7·9	
1973	3 540	32	4 847	23	15 916	33	4 816	25	3 157	39	32 276	30	+ 4·9	
1974	3 755	36	4 917	23	16 188	33	5 043	26	3 324	40	33 227	30	+ 2·9	
1975	3 547	33	5 051	24	16 223	32	4 896	24	3 480	41	33 197	30	— 0·1	
1976	3 563	34	5 299	24	16 295	31	4 742	23	3 434	36	33 333	29	+ 0·4	

*Rate per 1 000 population—(1976 Census, 1972-75 Estimates from Australian Bureau of Statistics, subject to 1976 Census revision)

TABLE 4

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1976

I.C.D. Categories	Disease Groups		Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
											Discharged	Transferred	Died	Deaths Per 1 000 Separations
Sec. I	000-009	Intestinal Infectious Diseases	2 569	2 604	16 729	15 346	6.5	5.9	0.8	0.8	5 012	139	22	4
	010-019	Tuberculosis	152	64	6 359	1 746	41.8	27.3	0.1	0.3	189	17	10	46
	020-027	Zoonotic Bacterial Diseases	2	....	15	....	7.5	....	....	0.0	2	....	....	....
	030-039	Other Bacterial Diseases	193	162	3 926	4 263	20.3	26.3	0.2	0.2	311	11	33	92
	040-046	Poliomyelitis and Other Enterovirus Diseases of Central Nervous System	82	50	481	302	5.9	6.0	0.0	0.0	132	....	....	....
	050-057	Viral Diseases Accompanied by Exanthem	630	572	4 019	3 413	6.4	6.0	0.2	0.2	1 184	16	2	1
	060-068	Anthropod-borne Viral Diseases	19	16	592	318	31.2	19.9	0.0	0.0	29	4	2	57
	070-079	Other Viral Diseases	1 687	1 473	6 255	5 951	3.7	4.0	0.3	0.3	3 118	35	7	2
	080-089	Rickettsioses and Other Anthropodborne Diseases	32	11	156	44	4.9	4.0	0.0	0.0	43	....	....	....
	090-099	Syphilis and Other Venereal Diseases	134	325	617	1 073	4.6	3.3	0.1	0.1	455	3	1	2
	100-104	Other Spirochaetal Diseases	2	....	14	....	7.0	....	....	0.0	2	....	....	....
	110-117	Mycoses	74	89	884	646	11.9	7.3	0.0	0.0	154	6	3	18
Sec. II	120-129	Helminthiases	13	15	62	184	4.8	12.3	0.0	0.0	28	....	....	....
	130-136	Other Infective and Parasitic Diseases	170	121	1 582	981	9.3	8.1	0.1	0.0	286	3	2	6
	140-149	Malignant Neoplasm of Buccal Cavity and Pharynx	102	43	1 838	712	18.0	16.6	0.1	0.0	127	5	13	89
	150-159	Malignant Neoplasm of Digestive Organs and Peritoneum	494	371	9 080	8 494	18.4	22.9	0.5	0.4	657	25	183	211
	160-163	Malignant Neoplasm of Respiratory System	696	117	14 108	2 059	20.3	17.6	0.7	0.1	569	31	213	261
	170-174	Malignant Neoplasm of Bone Connective Tissue Skin and Breast	931	856	7 002	9 595	7.5	11.2	0.3	0.5	1 708	32	47	26
	180-189	Malignant Neoplasm of Genito-Urinary Organs	774	533	8 283	7 240	10.7	13.6	0.4	0.4	1 169	35	103	78
	190-199	Malignant Neoplasm of Other and Unspecified Sites	578	584	10 599	10 468	18.3	17.9	0.5	0.5	781	56	325	279
	200-209	Neoplasms of Lymphatic and Haematopoietic Tissue	404	335	4 463	3 522	11.0	10.5	0.2	0.2	644	14	81	109
	210-228	Benign Neoplasms	709	1 776	3 535	10 544	5.0	5.9	0.5	0.5	2 462	21	2	....
	230-239	Neoplasms of Unspecified Nature	100	120	681	1 522	6.8	12.7	0.1	0.1	207	5	8	36
	240-246	Diseases of Thyroid Gland	62	309	593	3 221	9.6	10.4	0.2	0.2	360	7	4	10
Sec. III	250-258	Diseases of Other Endocrine Glands	721	930	11 612	17 407	16.1	18.7	0.6	0.9	1 535	78	38	23
	260-269	Avitaminoses and Other Nutritional Deficiency	290	244	4 678	2 371	16.1	9.7	0.2	0.1	496	32	6	11
	270-279	Other Metabolic Diseases	187	300	3 789	4 297	20.3	14.3	0.2	0.2	473	10	4	8

TABLE 4—continued

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1976—continued

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths Per 1 000 Separations
Sec. IV 280-289	Diseases of Blood and Blood Forming Organs	661	652	3 981	4 685	6.0	7.2	0.2	0.2	1 240	42	31	23
Sec. V 290-299 300-309 310-315	Psychoses Neuroses, Personality Disorders and Other Non-Psychotic Mental Disorders Mental Retardation	540 2 749 20	600 2 240 12	9 704 41 080 7 171	13 386 28 253 2 636	18.0 14.9 358.6	22.3 12.6 219.7	0.5 2.0 0.4	0.7 1.4 0.1	987 4 730 23	141 247 8	12 12 1	10 2 31
Sec. VI 320-324 330-333 340-349 350-358 360-369 370-379 380-389	Inflammatory Diseases of the Central Nervous System Hereditary and Familial Diseases of Nervous System Other Diseases of Central Nervous System Diseases of Nerves and Peripheral Ganglia Inflammatory Diseases of the Eye Other Diseases and Conditions of the Eye Diseases of the Ear and Mastoid Process	116 29 1 199 672 635 2 205 1 949	110 28 1 114 880 503 2 019 1 648	2 022 364 18 157 5 005 3 514 14 660 7 780	5 094 393 13 658 5 730 2 643 14 332 6 696	17.4 12.6 15.1 7.4 5.5 6.6 4.0	46.3 14.0 12.3 6.5 5.3 7.1 4.1	0.1 0.0 0.9 0.3 0.2 0.7 0.4	0.2 0.0 0.7 0.3 0.1 0.7 0.3	182 52 2 182 1 514 1 114 4 171 3 532	35 2 93 36 24 48 63	9 3 38 2 5 2	39 52 16 1 1
Sec. VII 390-392 393-398 400-404 410-414 420-429 430-438 440-448 450-458	Active Rheumatic Fever Chronic Rheumatic Heart Disease Hypertensive Disease Ischaemic Heart Disease Other Forms of Heart Disease Cerebrovascular Disease Diseases of Arteries, Arterioles and Capillaries Other Diseases of Circulatory System	92 110 614 2 595 1 724 1 083 630 1 956	90 105 903 1 395 1 295 980 337 2 637	1 626 1 378 5 284 29 925 26 304 35 399 13 994 19 312	1 075 1 480 8 381 15 304 24 114 25 756 7 508 26 742	17.7 12.5 8.6 11.5 15.3 32.7 22.2 9.9	11.9 14.1 9.3 11.0 18.6 26.3 22.3 10.1	0.1 0.1 0.3 1.5 1.3 1.7 0.7 0.9	0.1 0.1 0.4 0.7 1.2 1.3 0.4 1.3	169 207 1 461 3 445 2 600 1 483 852 4 497	13 3 38 114 130 221 38 47	.... 5 18 431 289 359 77 49	.... 23 11 108 95 174 79 10
Sec. VIII 460-466 470-474 480-486 490-493 500-508 510-519	Acute Respiratory Infection (except Influenza) Influenza Pneumonia Bronchitis, Emphysema and Asthma Other Diseases of Upper Respiratory Tract Other Diseases of Respiratory System	2 850 700 1 975 4 172 4 366 1 816	2 058 878 1 384 2 997 4 187 1 377	14 034 4 059 20 402 33 324 14 690 16 343	9 242 5 073 13 730 19 696 14 172 11 603	4.9 5.8 10.3 8.0 3.4 9.0	4.5 5.8 9.9 6.6 3.4 8.4	0.7 0.2 1.0 1.6 0.7 0.8	0.5 0.2 0.7 1.0 0.7 0.6	4 841 1 562 2 985 6 929 8 532 3 003	54 13 144 133 19 101	13 3 230 107 2 89	2 1 68 14 27

TABLE 4—continued
W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1976—continued

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths Per 1 000 Separations
Sec. IX 520-529 530-537 540-543 550-553 560-569 570-577	Diseases of Oral Cavity, Salivary Glands and Jaws	1 978	2 820	4 147	5 974	2.1	2.1	0.2	0.3	4 769	26	3	...
	Diseases of Oesophagus, Stomach and Duodenum	2 095	1 112	16 768	7 745	8.0	7.0	0.8	0.4	3 104	69	34	10
	Appendicitis	2 001	2 272	11 819	14 118	5.9	6.2	0.6	0.7	4 200	70	3	...
	Hernia of Abdominal Cavity	2 591	851	19 922	7 571	7.7	8.9	1.0	0.4	3 401	35	6	1
	Other Diseases of Intestine and Peritoneum	1 566	1 618	13 351	15 953	8.5	9.9	0.7	0.8	3 024	111	49	15
	Diseases of Liver, Gall Bladder and Pancreas	1 570	2 495	18 545	28 337	11.8	11.4	0.9	1.4	3 924	89	52	12
Sec. X 580-584 590-599 600-607 610-616 620-629	Nephritis and Nephrosis	1 686	2 545	4 318	4 690	2.6	1.8	0.2	0.2	4 190	22	19	4
	Other Diseases of Urinary System	1 871	2 184	13 376	13 942	7.1	6.4	0.7	0.7	3 941	70	44	10
	Diseases of Male Genital Organs	2 857	...	21 446	...	7.5	...	1.1	...	2 802	43	12	4
	Diseases of Breast, Ovary, Fallopian Tube and Parametrium	88	3 905	509	21 643	5.8	5.5	0.0	1.1	3 961	29	3	...
	Diseases of Uterus and Other Female Genital Organs	...	11 426	...	57 407	...	5.0	...	2.8	11 373	48	5	...
Sec. XI 630-634 635-639 640-645 650-662 670-678	Complications of Pregnancy	...	3 303	...	13 102	...	4.0	...	0.6	3 078	224	1	...
	Urinary Infections and Toxaemias of Pregnancy and Puerperium	...	906	...	4 410	...	4.9	...	0.2	859	45	2	2
	Abortion	...	3 245	...	8 448	...	2.6	...	0.4	3 233	12	...	...
	Delivery	...	20 347	...	176 916	...	8.7	...	8.7	20 157	188	2	...
	Complications of the Puerperium	...	135	...	563	...	4.2	...	0.0	128	5	2	14
Sec. XII 680-686 690-698 700-709	Infections of Skin and Subcutaneous Tissue	1 826	1 129	12 881	8 639	7.1	7.7	0.6	0.4	2 911	40	4	1
	Other Inflammatory Conditions of Skin and Subcutaneous Tissue	417	409	3 808	2 807	9.1	6.9	0.2	0.1	816	9	1	1
	Other Diseases of Skin and Subcutaneous Tissue	2 244	2 160	13 483	14 317	6.0	6.6	0.7	0.7	4 356	41	7	1
Sec. XIII 710-718 720-729 730-738	Arthritis and Rheumatism except Rheumatic Fever	1 196	1 387	19 751	27 008	16.5	19.5	1.0	1.3	2 523	51	9	3
	Osteomyelitis and Other Diseases of Bone and Joint	5 022	3 623	36 205	27 048	7.2	7.5	1.8	1.3	8 442	196	7	...
	Other Diseases of Musculoskeletal System	938	1 333	6 045	10 930	6.4	8.2	0.3	0.5	2 252	13	6	2

TABLE 4—continued

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1976—continued

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis- charged	Trans- ferred	Died	Deaths Per 1 000 Separations
Sec. XIV 740-759	Congenital Anomalies 	1 335	1 170	15 905	17 438	11.9	14.9	0.8	0.9	2 380	84	41	16
Sec. XV 760-779	Certain Causes of Perinatal Morbidity and Mortality 	332	264	4 098	3 345	12.3	12.7	0.2	0.2	483	83	30	50
Sec. XVI 780-789 790-796	Symptoms Referable to Systems or Organs Ill-Defined Diseases 	8 433 1 233	8 513 2 089	41 973 28 671	42 126 37 683	5.0 23.3	4.9 18.0	2.1 1.4	2.1 1.8	16 266 3 027	542 174	138 121	8 36
Sec. XVII 800-809 810-819 820-829 830-839 840-848	Fracture of Skull, Spine and Trunk Fracture of Upper Limb Fracture of Lower Limb Dislocation with Fracture Sprains and Strains of Joints and Adjacent Muscles 	1 593 2 085 1 701 422	714 1 278 1 248 180	16 394 8 964 30 814 2 150	9 038 6 417 30 963 985	10.3 4.3 18.1 5.1	12.7 5.0 24.8 5.5	0.8 0.4 1.5 0.1	0.4 0.3 1.5 0.0	2 139 3 256 2 649 577	144 103 255 25	24 4 45 ...	10 1 15 ...
850-854	Intracranial Injury (excluding those with Skull Fracture)	557	295	2 996	1 931	5.4	6.5	0.1	0.1	838	14	...	...
860-869	Internal Injury of Chest, Abdomen and Pelvis 	2 965	1 298	12 320	4 991	4.2	3.8	0.6	0.2	4 136	107	20	4
870-879	Laceration and Open Wound of Head, Neck and Trunk	267	84	2 960	869	11.1	10.3	0.1	0.0	317	18	16	45
880-887	Laceration and Open Wound of Upper Limb 	1 013	534	4 790	2 401	4.7	4.5	0.2	0.1	1 511	35	1	...
890-897	Laceration and Open Wound of Lower Limb 	1 382	372	5 034	1 600	3.6	4.3	0.2	0.1	1 718	36	...	...
900-907	Laceration and Open Wound of Multiple Location	800	425	5 213	2 678	6.5	6.3	0.3	0.1	1 206	19	...	...
910-918 920-929	Superficial Injury Contusion and Crushing with Intact Skin Surface 	288 365	130 170	1 391 1 737	819 745	4.8 4.8	6.3 4.4	0.1 0.1	0.0 0.0	404 526	13 7	1 2	2 3
930-939	Effects of Foreign Body Entering through Orifice 	687	376	3 999	2 373	5.8	6.3	0.2	0.1	1 034	28	1	...
940-949	Burn 	301	234	960	488	3.2	2.1	0.0	0.0	525	9	1	1
950-959	Injury to Nerves and Spinal Cord	985	440	9 979	4 779	10.1	10.9	0.5	0.2	1 362	53	10	7
960-979	Adverse Effect of Medicinal Agents	126	38	1 111	161	8.8	4.2	0.1	0.0	158	5	1	6
980-989	Toxic Effect of Substances Chiefly Non- Medicinal as to Source	839	1 433	4 038	5 302	4.8	3.7	0.1	0.3	2 181	83	8	3
990-999	Other Adverse Effects 	952 2 293	567 1 570	2 133 14 679	1 102 11 720	2.2 6.4	1.9 7.5	0.1 0.7	0.1 0.6	1 499 3 714	16 127	4 22	2 5

TABLE 4—continued

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1976—continued

I.C.D. Categories	Disease Groups						Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome									
	Male		Female		Male		Female		Male		Female		Male		Female		Discharged	Transferred	Died	Deaths Per 1 000 Separations				
Sec. Y																								
Y00-Y09	Examination and Investigation of Specific Systems without Reported Diagnosis																							
Y10-Y19	Other Examinations without Reported Diagnosis																							
Y20-Y29	Medical and Surgical Procedures without Reported Diagnosis																							
Y30-Y39	Medical and Surgical Aftercare without Current Complaint or Sickness																							
Y40-Y49	Persons Undergoing Preventive Measures																							
Y50-Y59	Elective Surgery																							
Y60-Y69	Maternal and Well-Baby Care																							
Y70-Y79	Other Persons without Current Complaint or Sickness																							
Y80-Y89	Healthy Live Born Infants according to Type of Birth																							
	114 889		148 253		934 421		1 106 916		8·1		7·5		45·8		54·2		253 426		6 038		3 678		13	
	263 142				2 041 337				7·8				100·0											

TABLE 5

W.A. HOSPITALS 1976—AGE DISTRIBUTION OF PATIENTS DISCHARGED BY SEX AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition	Age Groups											Not Stated	Total All Ages				
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54			55-59	60-64	65-69	70+
000-136 140-239 240-279 280-289 290-315 320-389 390-458 460-519 520-577 580-629 680-709 710-738 740-759 760-779 780-796 N800-N999 Y00-Y89	MALES																	
	Infective and Parasitic ...	2 789	719	312	268	304	248	194	142	91	107	98	86	110	88	196	7	5 759
	Neoplasms ...	126	93	69	83	87	116	135	119	157	285	385	468	635	677	1 352	1	4 788
	Endocrine, Nutritional, Metabolic ...	252	26	40	36	36	34	58	42	59	70	93	94	109	116	194	1	1 260
	Blood and Blood Forming Organs ...	104	156	58	35	41	19	16	14	10	14	21	27	33	39	74	...	661
	Mental Disorders ...	101	35	45	111	227	273	326	312	308	362	414	267	210	129	181	8	3 309
	Nervous System and Sense Organs ...	1 110	845	376	226	308	325	362	327	333	337	396	324	413	384	734	5	6 805
	Circulatory System ...	14	36	44	77	148	235	305	397	476	674	911	1 009	1 061	1 175	2 232	10	8 804
	Respiratory System ...	4 890	2 725	1 025	613	656	628	459	383	308	392	440	469	599	734	1 551	7	15 879
	Digestive System ...	818	751	824	751	845	884	762	662	671	816	823	725	747	682	1 034	6	11 801
	Genito-Urinary System ...	492	306	165	248	412	446	411	278	337	380	533	473	599	488	933	1	6 502
	Skin and Subcutaneous Tissue ...	474	325	315	403	381	353	284	264	243	253	260	214	215	188	309	6	4 487
	Musculoskeletal System ...	103	152	168	369	610	766	675	716	649	554	599	515	439	365	473	3	7 156
	Congenital Anomalies ...	510	323	167	77	43	42	26	24	21	19	16	22	17	13	15	...	1 335
	Perinatal Morbidity ...	327	1	...	...	...	...	...	4	...	...	...	...	...	...	...	...	332
	Symptoms and Ill-defined Conditions ...	1 453	770	536	405	516	531	490	513	468	583	542	539	550	568	1 193	9	9 666
	Accidents, Poisoning and Violence ...	1 980	1 657	1 676	2 693	2 853	2 073	1 320	1 053	853	790	656	498	478	344	670	27	19 621
Supplementary Classifications	648	204	149	319	394	741	883	724	536	479	356	341	325	249	374	2	6 724	
Total Males		16 191	9 124	5 969	6 714	7 861	7 714	6 706	5 974	5 520	6 115	6 543	6 071	6 540	6 239	11 515	93	114 889
Rate/1 000 Males		302	159	106	125	153	147	158	163	173	190	228	272	321	375	488	N/A	198
000-136 140-239 240-279 280-289 290-315 320-389 390-458 460-519 520-577 580-629 630-678 680-709 710-738 740-759 760-779 780-796 N800-N999 Y00-Y89	FEMALES																	
	Infective and Parasitic ...	2 218	623	299	425	390	307	202	132	105	89	118	104	105	96	283	6	5 502
	Neoplasms ...	99	61	94	165	223	295	283	276	298	413	412	335	448	447	884	2	4 735
	Endocrine, Nutritional, Metabolic ...	222	29	38	62	71	85	121	85	121	74	119	119	167	123	346	1	1 783
	Blood and Blood Forming Organs ...	58	56	64	47	32	26	37	24	27	30	31	22	21	50	127	...	652
	Mental Disorders ...	91	14	45	195	277	345	291	281	225	218	192	170	151	97	256	4	2 852
	Nervous System and Sense Organs ...	916	662	282	221	303	332	316	317	350	356	389	298	333	342	875	10	6 302
	Circulatory System ...	18	35	56	82	182	309	394	458	463	572	591	643	749	756	2 426	8	7 742
	Respiratory System ...	3 035	2 076	944	977	785	686	531	396	320	410	367	384	416	377	966	11	12 881
	Digestive System ...	540	706	792	1 281	1 222	1 058	693	663	541	651	574	519	525	461	937	5	11 168
	Genito-Urinary System ...	132	181	110	1 069	2 380	3 365	2 644	2 386	2 046	1 677	1 960	789	380	365	571	5	20 060
	Pregnancy and Childbirth ...	...	...	52	3 394	9 881	9 581	3 622	1 087	273	41	1	...	...	...	...	4	27 936
	Skin and Subcutaneous Tissue ...	390	230	238	358	287	263	214	206	197	222	207	164	201	177	340	4	3 098
	Musculoskeletal System ...	56	70	181	371	422	451	463	534	486	519	539	505	502	437	805	2	6 343
	Congenital Anomalies ...	409	124	112	107	74	102	52	52	35	33	24	26	11	18	19	1	1 170
	Perinatal Morbidity ...	263	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	264
	Symptoms and Ill-defined Conditions ...	1 181	604	568	845	967	884	699	614	552	525	528	446	502	462	1 216	9	10 602
Accidents, Poisoning and Violence ...	1 458	991	859	1 189	1 004	834	634	542	495	413	409	378	434	398	1 323	25	11 386	
Supplementary Classifications	295	165	153	811	2 013	2 728	2 200	1 581	960	606	490	308	269	221	367	10	13 177	
Total including Pregnancy		11 581	6 628	4 887	11 599	20 513	21 651	13 396	9 617	7 492	6 840	6 953	5 207	5 214	4 827	11 741	107	148 253
Rate/1 000 Females		227	122	92	226	415	440	345	280	254	235	260	233	237	268	358	N/A	263
Total Female excluding Pregnancy		11 581	6 628	4 835	8 205	10 632	12 070	9 774	8 530	7 219	6 799	6 952	5 207	5 214	4 827	11 741	107	120 317
Rate/1 000 Females		227	122	91	160	215	245	252	249	245	234	260	233	237	268	358	N/A	213
Total All Persons		27 772	15 752	10 856	18 313	28 374	29 365	20 102	15 591	13 012	12 955	13 496	11 278	11 754	11 066	23 256	200	263 142
Rate/1 000 Persons		265	141	99	174	282	288	248	219	212	211	243	253	277	319	412	N/A	230

N/A—Not Applicable

TABLE 6

AGE AND SEX SPECIFIC DISCHARGE RATES*—W.A. HOSPITALS 1971-1976

Year		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	N/S	Total
MALES																		
1971	...	279	144	98	115	134	123	122	132	144	159	182	217	272	322	456	N/A	173
1972	...	298	159	105	118	137	127	135	145	148	169	198	232	292	353	490	N/A	184
1973	...	308	156	104	123	146	127	135	151	159	171	204	240	292	368	491	N/A	188
1974	...	293	151	101	124	146	134	133	151	164	176	208	260	303	365	494	N/A	188
1975	...	291	156	107	128	158	139	150	157	175	188	208	268	307	389	516	N/A	195
1976	...	302	159	106	125	153	147	158	163	173	190	228	272	321	375	488	N/A	198
FEMALES INCLUDING PREGNANCY																		
1971	...	212	123	87	230	441	436	323	239	188	183	189	183	201	231	327	N/A	239
1972	...	222	134	98	241	449	453	336	261	211	192	208	199	220	257	340	N/A	254
1973	...	236	130	93	243	443	441	337	273	216	206	216	214	236	271	347	N/A	258
1974	...	223	124	91	240	452	438	352	269	233	229	229	209	226	254	343	N/A	259
1975	...	221	126	96	236	512	446	352	277	256	240	242	219	244	262	352	N/A	265
1976	...	227	122	92	226	415	440	345	280	254	235	260	233	237	268	358	N/A	263
FEMALES EXCLUDING PREGNANCY																		
1971	...	212	123	86	142	180	189	195	181	172	181	189	183	201	231	327	N/A	177
1972	...	222	134	97	153	201	222	221	211	196	190	208	199	220	257	340	N/A	195
1973	...	236	130	92	158	212	226	234	227	204	204	216	214	236	271	347	N/A	203
1974	...	223	124	90	160	223	231	249	230	225	228	220	209	226	254	343	N/A	205
1975	...	221	126	95	163	226	232	255	240	245	239	242	219	244	262	352	N/A	213
1976	...	227	122	91	160	215	245	252	249	245	234	260	233	237	268	358	N/A	213
TOTAL ALL PERSONS																		
1971	...	247	134	93	171	280	268	218	183	165	170	185	200	236	276	381	N/A	205
1972	...	261	147	101	178	286	278	230	200	178	180	203	216	256	307	403	N/A	218
1973	...	273	143	99	181	289	273	231	210	186	188	210	227	264	319	407	N/A	222
1974	...	259	138	96	180	293	277	236	208	197	201	214	234	264	307	406	N/A	223
1975	...	257	141	102	180	297	284	246	215	214	213	224	245	275	322	420	N/A	230
1976	...	265	141	99	174	282	288	248	219	212	211	243	253	277	319	412	N/A	230

* All rates per 1 000 population, based on Australian Bureau of Statistics data:
1971—Census
1976—Census—30th June Preliminary
1972-75—estimated, subject to 1976 Census revision
N/A—Not Applicable

TABLE 7
BIRTH RATES AND RELATED HOSPITAL DISCHARGES, W.A., 1971-1976

Year	Total Births	Birth Rate* Per 1 000		Hospital Discharge Rate for pregnancy and childbirth (ICD 630-678) Per 1 000 Females Aged 15-44
		Mean Population	Females Aged 15-44	
1971	24 537	23·8	111·5	142·6
1972	22 435	21·3	99·7	134·5
1973	20 780	19·4	89·9	125·5
1974	20 481	18·7	85·5	122·1
1975	20 574	18·3	83·0	117·5
1976	20 912	17·9	82·7	110·5

* (TOTAL BIRTHS);
all rates calculated from A.B.S. population data:
1971 and 1976 Actual Census
1972-75—Estimated, subject to 1976 Census revision.

TABLE 8

W.A. HOSPITALS 1976—AGE DISTRIBUTION OF ABORIGINES DISCHARGED BY SEX AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition	Age Groups															Total All Ages	
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+		Not Stated
MALES																		
000-136	Infective and Parasitic	1 023	94	28	21	10	18	7	6	13	11	7	12	8	10	14	3	1 285
140-239	Neoplasms	63	2	...	1	...	1	1	3	...	4	...	3	5	6	4	...	30
240-279	Endocrine, Nutritional, Metabolic	23	3	...	...	4	1	7	6	7	15	2	4	8	8	12	1	141
280-289	Blood and Blood Forming Organs	7	13	6	1	2	2	1	2	...	1	...	1	1	1	1	...	55
290-315	Mental Disorders	266	1	3	10	21	15	30	23	21	20	11	3	6	4	2	3	180
320-389	Nervous System and Sense Organs	5	134	48	15	37	12	33	14	34	29	12	16	16	15	20	4	705
390-458	Circulatory System	1 093	9	5	3	12	10	13	14	27	20	19	22	20	24	25	4	232
460-519	Respiratory System	53	174	62	30	40	40	31	51	47	47	46	38	34	50	74	4	1 861
520-577	Digestive System	49	21	24	19	11	18	35	12	15	14	6	6	6	4	8	...	252
580-629	Genito-Urinary System	150	30	16	16	7	10	9	12	3	14	11	5	8	10	7	...	207
680-709	Skin and Subcutaneous Tissue	9	88	40	16	22	26	29	30	30	18	20	7	10	17	15	2	520
710-738	Musculoskeletal System	15	13	8	7	20	14	10	6	11	6	11	4	...	1	3	...	123
740-759	Congenital Anomalies	33	4	5	...	...	...	...	...	...	...	1	...	...	...	1	...	26
760-779	Perinatal Morbidity	206	...	...	...	42	23	43	20	31	...	...	17	...	...	...	...	33
780-796	Symptoms and Illdefined Conditions...	188	66	40	34	152	134	115	92	78	58	29	21	14	24	48	5	665
N800-N999	Accidents, Poisoning, Violence	56	163	95	137	8	7	6	6	2	8	6	7	21	23	29	6	1 341
Y00-Y89	Supplementary Classifications...		14	5	8	8	7							3	3	5	...	144
Male Total		3 239	829	385	318	388	331	370	297	319	295	203	166	160	200	268	32	7 800
FEMALES																		
000-136	Infective and Parasitic	817	88	28	33	32	18	20	14	14	11	11	7	10	7	23	6	1 139
140-239	Neoplasms	4	1	...	...	3	3	5	3	7	5	5	4	4	10	5	...	59
240-279	Endocrine, Nutritional, Metabolic	52	1	1	1	5	2	9	6	20	11	21	14	27	17	9	1	197
280-289	Blood and Blood Forming Organs	7	6	6	6	4	3	3	1	2	2	2	2	1	...	2	...	47
290-315	Mental Disorders	3	1	3	17	9	9	16	15	12	8	1	7	2	1	6	2	112
320-389	Nervous System and Sense Organs	214	86	52	21	43	22	8	20	16	18	28	10	9	11	29	7	594
390-458	Circulatory System	4	7	16	12	12	10	14	23	21	26	17	17	14	15	20	...	228
460-519	Respiratory System	839	148	70	66	47	39	48	39	61	55	50	33	49	21	39	...	1 609
520-577	Digestive System	35	29	23	27	35	25	19	15	18	12	6	9	5	6	7	1	272
580-629	Genito-Urinary System	30	16	7	82	84	68	58	28	27	22	23	5	7	6	8	...	471
630-678	Pregnancy and Childbirth	...	...	22	407	463	218	95	41	23	6	...	...	...	...	...	1	276
680-709	Skin and Subcutaneous Tissue	121	80	41	20	12	24	11	20	25	13	15	16	19	4	12	4	437
710-738	Musculoskeletal System	5	11	9	12	11	15	3	9	9	6	5	7	12	7	7	...	128
740-759	Congenital Anomalies	13	4	2	2	1	...	...	...	...	...	...	...	...	...	...	...	22
760-779	Perinatal Morbidity	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30
780-796	Symptoms and Illdefined Conditions...	218	77	48	...	...	...	...	...	...	...	...	...	...	...	...	...	807
N800-N999	Accidents, Poisoning, Violence	126	102	60	111	118	139	100	90	86	66	37	23	31	18	17	11	1 135
Y00-Y89	Supplementary Classifications...	48	14	6	106	99	63	40	20	21	11	6	3	3	8	6	4	458
Female Total		2 566	671	394	998	1 033	711	494	380	397	310	254	174	217	151	224	47	9 021
Grand Total—Male and Female		5 805	1 500	779	1 316	1 421	1 042	864	677	716	605	457	340	377	351	492	79	16 821

TABLE 9

W.A. HOSPITALS 1976—AGE DISTRIBUTION OF NON-ABORIGINES DISCHARGED BY SEX AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition	Age Groups												Total All Ages				
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59		60-64	65-69	70+	Not Stated
MALES																		
000-136	Infective and Parasitic	1 766	625	284	247	294	230	187	136	78	96	91	74	102	78	182	4	4 474
140-239	Neoplasms	126	91	69	82	87	115	134	116	157	281	385	465	630	671	1 348	1	4 758
240-279	Endocrine, Nutritional, Metabolic	189	23	40	36	32	33	51	36	52	55	91	90	101	108	182	...	1 119
280-289	Blood and Blood Forming Organs	81	143	52	34	39	17	15	12	10	13	21	26	32	38	73	...	606
290-315	Mental Disorders	94	34	42	101	206	258	296	289	287	342	403	264	204	125	179	5	3 129
320-389	Nervous System and Sense Organs	844	711	328	211	271	313	329	313	299	308	384	308	397	369	714	1	6 100
390-458	Circulatory System	9	27	39	74	136	225	292	383	449	654	892	987	1 041	1 151	2 207	6	8 572
460-519	Respiratory System	3 797	2 551	963	583	616	588	428	332	261	345	394	431	565	684	1 477	3	14 018
520-577	Digestive System	765	730	800	732	834	866	727	650	656	802	817	719	741	678	1 026	6	11 549
580-629	Genito-Urinary System	443	276	149	232	405	436	402	266	334	366	522	468	591	478	926	1	6 295
680-709	Skin and Subcutaneous Tissue	324	237	275	387	359	327	255	234	213	235	240	207	205	171	294	4	3 967
710-738	Musculoskeletal System	94	139	160	362	590	752	665	710	638	548	588	511	439	364	470	3	7 033
740-759	Congenital Anomalies	495	319	162	77	43	42	26	24	21	19	15	22	17	13	14	...	1 309
760-779	Perinatal Morbidity	294	1	...	...	...	...	...	4	...	...	...	...	...	...	...	...	299
780-796	Symptoms and Ill-defined Conditions	1 247	704	496	371	474	508	447	493	437	553	520	522	536	544	1 145	4	9 001
N800-N999	Accidents, Poisoning, Violence	1 792	1 494	1 581	2 556	2 701	1 939	1 205	961	775	732	627	477	457	321	641	21	18 280
Y00-Y89	Supplementary Classifications...	592	190	144	311	386	734	877	718	534	471	350	334	322	246	369	2	6 580
Male Total		12 952	8 295	5 584	6 396	7 473	7 383	6 336	5 677	5 201	5 820	6 340	5 905	6 380	6 039	11 247	61	107 089
FEMALES																		
000-136	Infective and Parasitic	1 401	535	271	392	358	289	182	118	91	78	107	97	95	89	260	...	4 363
140-239	Neoplasms	95	60	94	165	220	292	278	273	291	408	407	331	444	437	879	2	4 676
240-279	Endocrine, Nutritional, Metabolic	170	28	37	61	66	83	112	79	101	63	98	105	140	106	337	...	1 586
280-289	Blood and Blood Forming Organs	51	50	58	41	28	23	34	23	25	28	29	20	20	50	125	...	605
290-315	Mental Disorders	88	13	42	178	268	336	275	266	213	210	191	163	149	96	250	2	2 740
320-389	Nervous System and Sense Organs	702	576	230	200	260	310	308	297	334	338	361	288	324	331	846	3	5 708
390-458	Circulatory System	14	28	40	70	170	299	380	435	442	546	574	626	735	741	2 406	8	7 514
460-519	Respiratory System	2 396	1 928	874	911	738	647	483	357	259	355	317	351	367	356	927	6	11 272
520-577	Digestive System	505	677	769	1 254	1 187	1 033	674	648	523	639	568	510	520	455	930	4	10 896
580-629	Genito-Urinary System	102	165	103	987	2 296	3 297	2 586	2 358	2 019	1 655	1 937	784	373	359	563	5	19 589
630-678	Pregnancy and Childbirth	...	...	30	2 987	9 418	9 363	3 527	1 046	250	35	1	...	...	...	...	3	26 660
680-709	Skin and Subcutaneous Tissue	269	150	197	338	275	239	203	186	172	209	192	148	182	173	328	...	3 261
710-738	Musculoskeletal System	51	59	172	359	411	436	460	525	477	513	534	498	490	430	798	2	6 215
740-759	Congenital Anomalies	396	120	110	105	73	102	52	35	33	24	26	23	11	18	19	1	1 148
760-779	Perinatal Morbidity	233	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	234
780-796	Symptoms and Ill-defined Conditions	963	527	520	770	912	831	654	578	517	487	501	429	478	442	1 182	4	9 795
N800-N999	Accidents, Poisoning, Violence	1 332	889	799	1 078	886	695	534	452	409	347	372	355	403	380	1 306	14	10 251
Y00-Y89	Supplementary Classifications...	247	151	147	705	1 914	2 665	2 160	1 561	939	595	484	305	266	213	361	6	12 719
Female Total		9 015	5 957	4 493	10 601	19 480	20 940	12 902	9 237	7 095	6 530	6 699	5 033	4 997	4 676	11 517	60	139 232
Grand Total, Male and Female		21 967	14 252	10 077	16 997	26 953	28 323	19 238	14 914	12 296	12 350	13 039	10 938	11 377	10 715	22 764	121	246 321

TABLE 10
W.A. HOSPITALS 1976—PATIENTS DISCHARGED BY RACE AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition Groups	Discharges				Days in Hospital				Average Number of Days in Hospital				% of Total Bed Days			
		Aboriginal		Non-Aboriginal		Aboriginal		Non-Aboriginal		Aboriginal		Non-Aboriginal		Aboriginal		Non-Aboriginal	
		Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group
000-136	Infective and Parasitic	2 424	21.5	8 837	78.5	11 261	26 748	35.2	49 210	64.8	75 958	11.0	5.6	6.7	1.31	2.41	3.72
140-239	Neoplasms	89	0.9	9 434	99.1	9 523	1 338	1.2	112 407	98.8	113 745	15.0	11.9	11.9	0.07	5.51	5.57
240-279	Endocrine, Nutritional, Metabolic	338	11.1	2 705	88.9	3 043	5 622	11.7	42 346	88.3	47 968	16.6	15.7	15.8	0.28	2.07	2.35
280-289	Blood and Blood Forming Organs	102	7.8	1 211	92.2	1 313	1 030	11.9	7 636	88.1	8 666	10.1	6.3	6.6	0.05	0.37	0.42
290-315	Mental Disorders	292	4.7	5 869	95.3	6 161	4 238	4.2	97 992	95.8	102 230	14.5	16.7	16.6	0.21	4.80	5.01
320-389	Nervous System and Sense Organs	1 301	9.9	11 806	90.1	13 107	13 978	14.0	86 069	86.0	100 047	10.7	7.3	7.6	0.68	4.22	4.90
390-458	Circulatory System	460	2.8	16 086	97.2	16 546	10 470	4.3	233 112	95.7	243 582	22.8	14.5	14.7	0.51	11.42	11.93
460-519	Respiratory System	3 468	12.1	25 292	87.9	28 760	27 507	15.6	148 861	84.4	176 368	7.9	5.9	6.1	1.35	7.29	8.64
520-577	Digestive System	524	2.3	22 445	97.7	22 969	4 076	2.5	160 174	97.5	164 250	7.8	7.1	7.2	0.20	7.85	8.05
580-629	Genito-Urinary System	678	2.6	25 884	97.4	26 562	4 838	3.5	132 493	96.5	137 331	7.1	5.1	5.2	0.24	6.49	6.73
630-678	Pregnancy and Childbirth	1 276	4.6	26 660	95.4	27 936	11 521	5.7	191 918	94.3	203 439	9.0	7.2	7.3	0.56	9.40	9.97
680-709	Skin and Subcutaneous Tissue	957	11.7	7 228	88.3	8 185	8 648	15.5	47 287	84.5	55 935	9.0	6.5	6.8	0.42	2.32	2.74
710-738	Musculoskeletal System	251	1.9	13 248	98.1	13 499	2 825	2.2	124 162	97.8	126 987	11.3	9.4	9.4	0.14	6.08	6.22
740-759	Congenital Anomalies	48	1.9	2 457	98.1	2 505	1 766	5.3	31 577	94.7	33 343	36.8	12.9	13.3	0.09	1.55	1.63
760-779	Perinatal Morbidity	63	10.6	533	89.4	596	1 432	19.2	6 011	80.8	7 443	22.7	11.3	12.5	0.07	0.29	0.36
780-796	Symptoms and Illdefined Conditions	1 472	7.3	18 796	92.7	20 268	14 981	10.0	135 472	90.0	150 453	10.2	7.2	7.4	0.73	6.64	7.37
N800-N999	Accidents, Poisoning, Violence	2 476	8.0	28 531	92.0	31 007	18 812	8.5	202 212	91.5	221 024	7.6	7.1	7.1	0.92	9.91	10.83
Y00-Y89	Supplementary Classifications	602	3.0	19 299	97.0	19 901	3 566	4.9	69 002	95.1	72 568	5.9	3.6	3.6	0.17	3.38	3.55
	Total	16 821	6.4	246 321	93.6	263 142	163 396	8.0	1 877 941	92.0	2 041 337	9.7	7.6	7.8	8.00	92.00	100.00

TABLE 11
W.A. HOSPITALS 1976—PATIENTS DISCHARGED BY PRINCIPAL CONDITION AND TYPE OF HOSPITAL

I.C.D. Categories	Principal Condition Groups	Discharges						Days in Hospital						Average Number of Days in Hospital				Percentage of Total Bed Days						
		Teaching			Private			Other Govt. and Board			All Hos- pitals			Teach- ing	Pri- vate	Other Govt. and Board	All Hos- pitals	Teach- ing	Pri- vate	Other Govt. and Board	All Hos- pitals			
		% for Group		No.	% for Group		No.	% for Group		No.	% for Group		No.									% for Group		No.
		No.	% for Group		No.	% for Group		No.	% for Group		No.	% for Group										No.	% for Group	
000-136	Infective and Parasitic	3 150	27.97	801	7.11	7 310	64.91	11 261	36.85	3 214	4.23	44 750	58.91	75 958	8.9	4.0	6.1	6.7	1.37	0.16	2.19	3.72		
140-239	Neoplasms	5 136	53.93	1 687	17.72	2 700	28.35	9 523	58.90	14 944	13.14	31 809	27.97	113 745	13.0	8.9	11.8	11.9	3.28	0.73	1.56	5.57		
240-279	Endocrine, Nutritional, Metabolic	1 077	35.39	421	13.84	1 545	50.77	3 043	34.07	6 549	13.65	25 076	52.28	47 968	15.2	15.6	16.2	15.8	0.80	0.32	1.23	2.35		
280-289	Blood and Blood Forming Organs	602	45.85	155	11.81	556	42.35	1 313	43.88	994	11.47	3 869	44.65	8 666	6.3	6.4	7.0	6.6	0.19	0.05	0.18	0.42		
290-315	Mental Disorders	2 495	40.50	987	16.02	2 679	43.48	6 161	44.59	19 205	18.79	37 438	36.62	102 230	18.3	19.5	14.0	16.6	2.23	0.94	1.83	5.01		
320-389	Nervous System and Sense Organs	4 978	37.98	3 928	29.97	4 201	32.05	13 107	48.41	17 515	17.51	34 100	34.08	100 047	9.7	4.5	8.1	7.6	2.37	0.86	1.67	4.90		
390-458	Circulatory System	7 202	43.53	2 506	15.15	6 838	41.33	16 546	42.78	32 904	13.51	106 469	43.71	243 582	14.5	13.6	15.6	14.7	5.10	1.61	5.22	11.93		
460-519	Respiratory System	7 400	25.73	5 494	19.10	15 866	55.17	28 760	47.40	24 518	13.90	104 449	59.22	176 368	6.6	4.5	6.6	6.1	2.32	1.20	5.12	8.64		
520-577	Digestive System	6 932	30.18	5 614	24.44	10 423	45.38	22 969	58.48	35.61	37 442	22.80	68 323	41.60	164 250	8.4	6.7	6.6	7.2	2.87	1.83	3.35		
580-629	Genito-Urinary System	9 119	34.33	6 479	24.39	10 964	41.28	26 562	39.45	28.73	40 133	29.22	57 739	42.04	137 331	4.3	6.2	5.3	5.2	1.93	1.97	2.83		
630-678	Pregnancy and Childbirth	6 261	22.41	6 791	24.31	14 884	53.28	27 936	43.87	21.57	53 296	26.20	106 265	52.23	203 439	7.0	7.8	7.1	7.3	2.15	2.61	5.21		
680-709	Skin and Subcutaneous Tissue	1 460	17.84	2 133	26.06	4 592	56.10	8 185	13.54	24.22	11 552	20.65	30 835	55.13	55 935	9.3	5.4	6.7	6.8	0.66	0.57	1.51		
710-738	Musculoskeletal System	4 103	30.39	4 690	34.74	4 706	34.86	13 499	54.02	42.54	29 793	23.46	43 168	33.99	126 987	13.2	6.4	9.2	9.4	2.65	1.46	2.11		
740-759	Congenital Anomalies	1 599	63.83	501	20.00	405	16.17	2 505	29.41	88.22	2 117	6.35	1 810	5.43	33 343	18.4	4.2	4.5	13.3	1.44	0.10	0.09		
760-779	Perinatal Morbidity	264	44.30	101	16.95	231	38.76	596	3.65	49.05	1 094	14.70	2 698	36.25	7 443	13.8	10.8	11.7	12.5	0.18	0.05	0.13		
780-796	Symptoms and Ill-defined Conditions	5 688	28.06	2 335	11.52	12 245	60.42	20 268	29.91	19.88	29 169	19.39	91 374	60.73	150 453	5.3	12.5	7.5	7.4	1.74	1.43	4.48		
N800-N999	Accidents, Poisoning, Violence	14 340	46.25	2 018	6.51	14 649	47.24	31 007	125.69	56.87	13 238	5.99	82 093	37.14	221 024	8.8	6.6	5.6	7.1	6.16	0.65	4.02		
Y00-Y89	Supplementary Classifications	3 326	16.71	7 678	38.58	8 897	44.71	19 901	17.13	23.61	26 182	36.08	29 254	40.31	72 568	5.2	3.4	3.3	3.6	0.84	1.28	1.43		
Total		85 132	32.35	54 319	20.64	123 691	47.01	263 142	775.959	38.01	363 859	17.82	901 519	44.16	2041337	9.1	6.7	7.3	7.8	38.01	17.82	44.16		
																						100.00		

TABLE 12.

W.A. HOSPITALS 1976—PATIENTS DISCHARGED BY PRINCIPAL CONDITION AND TYPE OF HOSPITAL

I.C.D. Categories	Principal Condition Groups	Discharges										State Total				
		Metropolitan					Country									
		Teaching		Government		Private		Total		Govt. and Board			Private		Total	
		No.	% of Group	No.	% of Group	No.	% of Group	No.	% of Group	No.	% of Group		No.	% of Group	No.	% of Group
		No.	% of Group	No.	% of Group	No.	% of Group	No.	% of Group	No.	% of Group		No.	% of Group	No.	% of Group
000-136	Infective and Parasitic	3 150	27.97	945	8.39	550	4.88	4 645	41.25	6 365	56.52	251	2.23	6 616	58.75	
140-239	Neoplasms	5 136	53.93	1 706	17.91	1 607	16.87	8 449	88.72	994	10.44	80	0.84	1 074	11.28	
240-279	Endocrine, Nutritional, Metabolic	1 077	35.39	337	11.07	345	11.34	1 759	57.80	1 208	39.70	76	2.50	1 284	42.20	
280-289	Blood and Blood Forming Organs	602	45.85	129	9.82	135	10.28	866	65.96	427	32.52	20	1.52	447	34.04	
290-315	Mental Disorders	2 495	40.50	1 149	18.65	936	15.19	4 580	74.34	1 530	24.83	51	0.83	1 581	25.66	
320-389	Nervous System and Sense Organs	4 978	37.98	1 270	9.69	3 792	28.93	10 040	76.60	2 931	22.36	136	1.04	3 067	23.40	
390-458	Circulatory System	7 202	43.53	2 366	14.30	2 202	13.31	11 770	71.14	4 472	27.03	304	1.84	4 776	28.86	
460-519	Respiratory System	7 400	25.73	3 144	10.93	4 838	16.82	15 382	53.48	12 722	44.24	656	2.28	13 378	46.52	
520-577	Digestive System	6 932	30.18	4 351	18.94	4 999	21.76	16 282	70.89	6 072	26.44	615	2.68	6 687	29.11	
580-629	Genito-Urinary System	9 119	34.33	5 502	20.71	6 008	22.62	20 629	77.66	5 462	20.56	471	1.77	5 933	22.34	
630-678	Pregnancy and Childbirth	6 261	22.41	7 137	25.55	6 284	22.49	19 682	70.45	7 747	27.73	507	1.81	8 254	29.55	
680-709	Skin and Subcutaneous Tissue	1 460	17.84	1 485	18.14	2 020	24.68	4 965	60.66	3 107	37.96	113	1.38	3 220	39.34	
710-738	Musculoskeletal System	4 103	30.39	2 170	16.08	4 494	33.29	10 767	79.76	2 536	18.79	196	1.45	2 732	20.24	
740-759	Congenital Anomalies	1 599	63.83	266	10.62	480	19.16	2 345	93.61	139	5.55	21	0.84	160	6.39	
760-779	Perinatal Morbidity	264	44.30	89	14.93	88	14.77	441	73.99	142	23.83	13	2.18	155	26.01	
780-796	Symptoms and Ill-defined Conditions	5 688	28.06	2 071	10.22	1 760	8.68	9 519	46.97	10 174	50.20	575	2.84	10 749	53.03	
NN800-N999	Accidents, Poisoning, Violence	14 340	46.25	1 947	6.28	1 638	5.28	17 925	57.81	12 702	40.96	380	1.23	13 082	42.19	
YY00-Y89	Supplementary Classifications....	3 326	16.71	4 946	24.85	7 323	36.80	15 595	78.36	3 951	19.85	355	1.78	4 306	21.64	
	Total	85 132	32.35	41 010	15.58	49 499	18.81	175 641	66.75	82 681	31.42	4 820	1.83	87 501	33.25	
															263 142	

TABLE 13

W.A. HOSPITALS—OPERATION CASES DISCHARGED DURING 1976

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent Operation Bed Days		Outcome					
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths per 1 000 Separations		
Sec. I															
001-019	Skull, Brain and Cerebral Meninges	256	135	8 794	4 017	34.4	29.8	1.0	0.4	318	40	33	84		
020-029	Spine and Spinal Cord	2 072	1 357	17 965	12 595	8.7	9.3	2.0	1.4	3 328	88	13	3		
030-035	Cranial Nerves	35	38	219	169	6.3	4.4	0.0	0.0	73	...	...	...
036-039	Autonomic Nervous System (Sympathetic and Parasympathetic)	202	145	3 180	2 305	15.7	15.9	0.4	0.3	341	1	5	14		
040-049	Peripheral Nerves	368	568	1 746	2 649	4.7	4.7	0.2	0.3	936	...	...	...
Sec. II															
061-063	Pituitary	5	10	73	211	14.6	21.1	0.0	0.0	13	2	...	...
065-069	Adrenal	4	8	51	135	12.8	16.9	0.0	0.0	11	...	1	83		
071-076	Thyroid and Parathyroid	36	203	384	1 787	10.7	8.8	0.0	0.2	238	1	...	...
077-079	Thymus and Carotid Body	4	1	43	18	10.8	18.0	0.0	0.0	5	...	...	...
080-089	Surgery of Neck	272	201	3 129	2 255	11.5	11.2	0.3	0.2	444	14	15	31		
Sec. III															
100-109	Orbit and Globe	95	37	840	324	8.8	8.8	0.1	0.0	129	3	...	...
110-115	Eye Muscles of Globe	340	357	1 149	1 161	3.4	3.3	0.1	0.1	695	2	...	...
117-129	Eyelids	418	468	2 175	1 936	5.2	4.1	0.2	0.2	881	4	1	1		
132-139	Conjunctiva	585	323	1 738	817	3.0	2.5	0.2	0.1	907	1	...	...
140-149	Cornea	121	78	1 337	827	11.0	10.6	0.1	0.1	198	1	...	...
150-159	Iris and Ciliary Body	82	91	963	1 118	11.7	12.3	0.1	0.1	173	...	...	...
160-169	Sclera, Choroid, Retina and Vitreous	134	113	1 691	1 053	9.2	9.3	0.2	0.1	292	5	...	...
170-179	Lens	522	593	6 002	6 314	11.5	10.6	0.7	0.7	1 096	15	4	3		
180-189	Lacrimal Apparatus	176	195	340	463	1.9	2.4	0.0	0.1	366	5	...	...
Sec. IV															
190-209	Ear	1 516	1 218	5 022	4 043	3.3	3.3	0.6	0.4	2 692	39	3	1		
210-224	Nose	2 047	1 431	7 295	5 995	3.6	4.2	0.8	0.7	3 472	5	1	...		
225-229	Accessory Air Sinuses and Other Parts of Face	124	107	617	645	5.0	6.0	0.1	0.1	228	1	2	8		
230-239	Naso-pharynx	2 408	2 844	7 058	8 760	2.9	3.1	0.8	1.0	5 248	3	1	...		
240-249	Larynx and Trachea	361	163	4 313	1 154	11.9	7.1	0.5	0.1	504	5	15	28		
Sec. V															
250-259	Teeth and Jaws	1 894	2 581	4 988	5 281	2.6	2.0	0.6	0.6	4 443	31	1	...		
260-267	Tongue and Mouth	184	136	1 429	623	7.8	4.6	0.2	0.1	318	...	2	6		
270-273	Salivary Glands (Parotid, Sublingual, Sub-mandibular Glands)	76	86	546	508	7.2	5.9	0.1	0.1	159	3	...	...
280-283	Pharynx	26	16	304	93	11.7	5.8	0.0	0.0	39	...	3	71		
290-299	Oesophagus	328	257	2 367	1 630	7.2	6.3	0.3	0.2	572	4	9	15		

TABLE 13—continued

W.A. HOSPITALS—OPERATION CASES DISCHARGED DURING 1976

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent Operation Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths per 1 000 Separations
Sec. VI													
300-309	Heart	495	263	5 809	2 849	11·7	10·8	0·6	0·3	698	34	26	34
320-329	Intra Thoracic Vessels	97	50	821	521	8·5	9·0	0·1	0·1	147	3	5	32
330-339	Thoracic Cage	206	121	3 631	2 386	17·6	19·7	0·4	0·3	305	5	17	51
340-349	Lung and Bronchus	306	104	4 766	1 402	15·6	13·5	0·5	0·2	387	13	10	24
Sec. VII													
380-389	Breast	87	2 570	508	15 486	5·8	6·0	0·1	1·7	2 650	5	2	...
Sec. VIII													
400-409	Abdominal Wall	339	1 287	5 806	11 173	17·1	8·7	0·6	1·2	1 531	24	71	43
410-419	Hernia	2 414	671	18 779	5 935	7·8	8·8	2·1	0·7	3 051	28	6	1
420-439	Stomach	1 246	735	12 015	6 011	9·6	8·2	1·3	0·7	1 934	14	33	16
440-445	Appendix	1 819	2 186	11 224	14 060	6·2	6·4	1·2	1·6	3 969	34	2	...
446	Other Diverticulae	3	5	29	59	9·7	11·8	0·0	0·0	8	...	...	...
450-469	Small Intestine—Colon	640	704	7 705	11 058	12·0	15·7	0·9	1·2	1 292	26	26	19
470-479	Rectum	160	151	2 597	2 462	16·2	16·3	0·3	0·3	305	3	3	...
480-499	Anus	1 647	1 175	12 990	9 122	7·9	7·8	1·4	1·0	2 803	17	2	...
500-509	Liver	120	78	1 107	990	9·2	12·7	0·1	0·1	196	...	2	10
510-519	Bile Ducts	32	61	688	935	21·5	16·1	0·1	0·1	90	1	2	21
520-529	Gall Bladder	577	1 528	8 584	20 501	14·9	13·4	0·9	2·3	2 068	23	14	5
530-539	Pancreas	31	57	294	495	9·5	8·7	0·0	0·1	88	...	...	...
540-549	Spleen and Abdominal Venous System	53	27	916	869	17·3	32·2	0·1	0·1	74	2	4	50
550-559	Abdominal Structures, N.E.C.	91	27	1 908	487	21·0	18·0	0·2	0·1	111	3	4	33
Sec. IX													
560-579	Kidney	280	246	3 904	3 319	13·9	13·5	0·4	0·4	512	10	4	7
580-589	Ureter	322	258	2 973	1 935	9·2	7·5	0·3	0·2	570	5	5	8
600-619	Urinary Bladder	2 747	1 694	12 825	6 766	4·7	4·0	1·4	0·7	4 390	34	17	3
620-629	Urethra	426	138	2 730	877	6·4	6·4	0·3	0·1	560	4	...	...
630-637	Prostate	971	...	16 313	...	16·8	...	1·8	...	933	22	16	16
639	Seminal Vesicles	...	...	...	...	...	...	...	...	...	...	...	...
640-669	Testis, Epididymis, and Scrotum	3 829	...	10 684	...	2·8	...	1·2	...	3 818	7	4	1
Sec. X													
671-679	Ovary	...	491	...	4 635	...	9·4	...	0·5	485	5	1	2
681-689	Oviduct (Fallopian Tube)	...	5 559	...	25 223	...	4·5	...	2·8	5 539	20	...	...
690-709	Uterus (Hysterectomy)	...	13 557	...	57 207	...	4·2	...	6·3	13 527	25	5	...
710-729	Vagina	...	793	...	8 862	...	11·2	...	1·0	789	3	1	1
730-739	Introitus, Vulva, Labia and Perineum	...	533	...	2 078	...	3·9	...	0·2	530	1	2	3

Sec. XI 740-750 751-769 770-779	Ante-Natal Obstetric Operations	...	2 451	...	9 962	...	4·1	...	1·1	2 443	8	...	...
	Delivery Obstetric Operations	...	7 238	...	70 919	...	9·8	...	7·8	7 189	48	...	...
	Post-Natal or Post-Abortion Operations	...	1 942	...	8 780	...	4·5	...	1·1	1 930	12	...	...
Sec. XII 780-788 790-799 800-822 825-826 827-828 830-839 840-852 854-859 860-879	Treatment of Fractures	3 357	2 165	35 356	28 140	10·5	13·0	3·9	3·1	5 225	260	37	6
	Bone	750	792	8 585	11 119	11·4	14·0	0·9	1·2	1 510	18	14	9
	Joints	3 175	2 775	26 205	28 944	8·3	10·4	2·9	3·2	5 853	81	16	2
	Capsule and Ligaments of Joints	91	36	695	328	7·6	9·1	0·1	0·0	127	...	...	...
	Bursae	101	43	760	437	7·5	10·2	0·1	0·0	142	2	...	...
	Muscles	90	68	932	610	10·4	9·0	0·1	0·1	155	2	1	6
	Tendon	669	488	3 504	2 403	5·2	4·9	0·4	0·3	1 153	4	...	...
	Fascia	176	67	788	369	4·5	5·5	0·1	0·0	243	...	...	...
	Amputation and Other Operations on Limbs	415	176	8 556	4 816	20·6	27·4	0·9	0·5	555	19	17	28
Sec. XIII 880-889 890-898 900-909	Arteries	301	190	3 694	2 383	12·3	12·5	0·4	0·3	471	3	17	34
	Veins	442	1 298	4 209	11 473	9·5	8·8	0·5	1·3	1 729	6	5	2
	Lymphatics	128	83	1 536	603	54·9	7·3	0·2	0·1	207	3	1	4
Sec. XIV 910-929 930-939	Skin and Subcutaneous Tissue	5 944	5 089	28 930	24 967	4·9	4·9	3·2	2·8	10 963	61	9	...
	Plastic Operations	901	670	8 134	7 508	9·0	11·2	0·9	0·8	1 558	11	2	1
Sec. XV 940-950 952-959 960-969 970-979 980-999	Injection for General Action	2 081	2 975	5 759	6 267	2·8	2·1	0·6	0·7	4 983	16	57	11
	Operations with Site Unspecified	26	31	161	223	6·2	7·2	0·0	0·0	57	...	...	...
	Non-Operative Procedures	620	533	3 988	4 161	6·4	7·8	0·4	0·5	1 137	7	9	7
	Anaesthetic Procedures	84	275	312	868	3·7	3·2	0·0	0·1	356	3	...	...
	Diagnostic Radiographic Techniques	476	483	7 647	7 929	16·1	16·4	0·8	0·9	875	40	44	45
Total		53 506	78 705	385 225	519 848	7·2	6·6	42·6	57·4				
Grand Total, Male and Female		132 211		905 073		6·8		100·0		130 340	1 248	623	4

TABLE 14

W.A. HOSPITALS 1976—AGE DISTRIBUTION OF OPERATION CASES BY SEX AND OPERATION

Code of Surgical Pro-cedures	Operation Group	Five Year Age Group														Total All Ages		
		Five Year Age Group																
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69		70 +	Not Stated
MALES																		
0001-049	Nervous System	45	38	32	84	176	282	298	354	325	267	283	283	177	134	163	1	2 933
0061-089	Endocrine, System	41	17	16	25	27	18	22	13	22	34	17	22	17	20	10	....	321
1000-189	Eye	317	140	94	102	129	121	112	112	126	147	181	141	194	188	415	4	2 523
190-249	Ear, Nose and Throat	672	1 740	693	472	485	499	369	275	207	219	195	177	174	123	155	1	6 456
250-299	Upper Alimentary Tract	303	288	189	260	301	231	164	97	104	104	103	93	83	81	106	1	2 508
300-349	Thorax	79	30	11	41	38	36	25	42	69	99	127	138	128	110	131	....	1 104
380-389	Breast	....	....	6	11	11	8	12	5	7	4	4	7	1	6	5	....	87
400-559	Abdomen	470	395	520	472	610	725	626	636	586	729	737	634	640	552	836	4	9 172
560-669	Urinary and Male Genital Organs	809	418	205	190	328	696	874	630	456	480	410	434	607	683	1 354	1	8 575
780-879	Orthopaedic	290	587	636	1 026	1 158	986	659	627	508	468	467	364	343	285	416	4	8 824
880-909	Peripheral Circulation	16	6	12	30	31	44	65	58	71	76	110	96	90	75	91	....	871
910-939	Skin and Subcutaneous Tissue	481	559	570	732	656	539	421	408	335	388	383	346	327	283	409	8	6 845
940-999	Other Surgical Procedures	154	150	86	167	284	255	232	168	236	235	342	283	347	141	206	1	3 287
Total		3 677	4 368	3 070	3 612	4 225	4 440	3 879	3 425	3 052	3 250	3 359	3 018	3 128	2 681	4 297	25	53 506
Rate/1 000 Males		69	76	55	67	82	84	91	93	96	101	117	135	153	161	182	N/A	92
FEMALES																		
0001-049	Nervous System	42	18	19	52	103	186	191	267	270	249	281	176	137	114	135	3	2 243
0061-089	Endocrine System	40	5	10	25	38	45	50	29	42	35	30	18	20	17	19	....	423
100-189	Eye	314	115	64	63	95	85	80	65	119	117	120	118	147	177	572	4	2 255
190-249	Ear, Nose and Throat	550	1 556	685	676	514	414	286	215	155	180	147	98	111	72	100	4	5 763
250-299	Upper Alimentary Tract	216	362	266	508	483	320	171	112	112	109	91	65	85	74	101	1	3 076
300-349	Thorax	73	18	21	25	14	27	31	21	34	40	46	48	44	41	63	....	546
380-389	Breast	2	2	9	153	251	403	350	335	287	285	158	84	76	73	102	....	2 570
400-559	Abdomen	217	274	477	824	911	936	691	638	528	609	588	492	464	370	670	3	8 692
560-669	Urinary and Female Genital Organs	41	86	37	91	127	182	165	202	209	168	175	185	171	184	312	1	2 336
671-739	Female Genital Tract	17	23	34	856	2 963	4 687	3 894	2 958	1 931	1 455	965	407	275	225	240	3	20 933
740-779	Obstetric	....	....	34	1 648	3 804	3 886	1 556	524	147	26	2	....	....	....	....	4	11 631
780-879	Orthopaedic	202	370	391	479	433	400	383	353	346	389	459	431	496	422	1 051	5	6 610
880-909	Peripheral Circulation	10	2	16	20	62	138	214	206	172	206	159	124	92	70	79	1	1 571
910-939	Skin and Subcutaneous Tissue	408	424	525	603	427	478	397	346	342	336	335	245	299	201	390	3	5 759
940-999	Other Surgical Procedures	162	75	84	149	137	307	186	339	490	322	1 091	393	134	125	300	3	4 297
Total, including Obstetrics		2 294	3 330	2 672	6 172	10 362	12 494	8 645	6 610	5 184	4 526	4 647	2 884	2 551	2 165	4 134	35	78 705
Rate/1 000 Females		45	61	50	120	210	254	223	193	176	156	174	130	116	120	126	N/A	140
Total, excluding obstetrics		2 294	3 330	2 638	4 524	6 558	8 608	7 089	6 086	5 037	4 500	4 645	2 884	2 551	2 165	4 134	35	78 705
Rate/1 000 Females		45	61	50	88	133	175	183	177	171	155	174	130	116	120	126	N/A	119
Total		5 971	7 698	5 742	9 784	14 587	16 934	12 524	10 035	8 236	7 776	8 006	5 902	5 679	4 846	8 431	60	132 211
Rate/1 000 Persons		57	69	53	93	145	166	154	141	134	127	144	132	134	140	150	N/A	115

* N/A = Not Applicable.

TABLE 15

AGE AND SEX SPECIFIC OPERATION RATES*—W.A. HOSPITALS 1971-1976

Year		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	N/S	Total
MALES																		
1971	...	62	72	51	61	70	64	66	73	80	81	85	99	121	131	151	N/A	76
1972	...	56	77	52	61	71	69	78	83	83	86	95	108	126	149	171	N/A	81
1973	...	66	76	52	63	76	72	76	87	90	88	98	110	124	151	172	N/A	83
1974	...	69	76	51	65	77	78	76	84	95	89	102	120	131	149	178	N/A	85
1975	...	72	77	52	69	86	77	85	86	99	98	102	130	133	165	183	N/A	89
1976	...	69	76	55	67	82	84	91	93	96	101	117	135	153	161	182	N/A	92
FEMALES INCLUDING OBSTETRIC																		
1971	...	38	65	47	108	178	193	173	144	120	112	106	88	91	94	104	N/A	108
1972	...	40	69	51	116	198	227	192	162	136	213	118	102	96	108	115	N/A	120
1973	...	41	65	48	112	192	217	195	171	135	128	124	104	101	114	115	N/A	120
1974	...	45	64	49	118	202	218	211	172	152	147	128	109	104	108	116	N/A	126
1975	...	44	53	53	121	208	235	218	181	180	157	153	119	118	116	123	N/A	135
1976	...	45	61	50	120	210	254	223	193	176	156	174	130	116	120	126	N/A	140
FEMALES EXCLUDING OBSTETRIC																		
1971	...	38	65	47	79	113	129	136	125	114	112	106	88	91	94	104	N/A	108
1972	...	40	69	50	82	123	153	154	118	129	118	118	102	96	108	115	N/A	120
1973	...	41	65	47	82	128	153	163	155	131	110	124	104	101	114	115	N/A	103
1974	...	45	64	49	88	140	160	180	157	148	147	128	109	104	108	116	N/A	110
1975	...	44	53	52	93	141	171	184	167	175	142	153	119	118	116	123	N/A	118
1976	...	45	61	50	88	133	175	183	177	171	155	174	130	116	120	126	N/A	119
TOTAL PERSONS																		
1971	...	50	68	49	84	121	124	117	130	99	96	95	94	106	113	124	N/A	91
1972	...	53	74	52	88	132	142	132	121	107	99	106	105	111	130	138	N/A	100
1973	...	54	70	50	87	132	140	133	127	111	107	110	107	113	132	139	N/A	101
1974	...	57	70	50	91	137	133	140	126	122	117	115	67	117	127	141	N/A	105
1975	...	58	70	52	94	145	152	148	132	138	126	127	124	125	139	148	N/A	112
1976	...	57	69	53	93	145	166	154	141	134	127	144	132	134	140	150	N/A	115

* All Rates per 1 000 population, based on Australian Bureau of Statistics Data:
1971—Census
1976—Census—30th June Preliminary
1972-75—Estimated, Subject to 1976 Census Revision
N/A—Not Applicable.

TABLE 16
W.A. HOSPITALS 1976—PATIENTS DISCHARGED BY OPERATION GROUP AND TYPE OF HOSPITAL

Code of Surgical Procedures	Operation Group	Discharges						Days in Hospital						Average Number of Days in Hospital				Percentage of Total Bed Days			
		Teaching		Private		Other Govt. and Board		All Hospitals		Teaching		Private		Other Govt. and Board		All Hospitals		Teaching	Private	Other Govt. and Board	All Hospitals
		No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group				
001-049	Nervous System	2 709	52.34	1 676	32.38	791	15.28	5 176	37 786	70.45	10 374	19.34	5 479	10.21	53 639	13.9	6.2	4.17	1.15	0.61	5.93
061-089	Endocrine System	520	69.89	133	17.88	91	12.23	744	6 570	81.15	953	11.77	573	7.08	8 096	12.6	7.2	0.73	0.11	0.06	0.89
100-189	Eye	1 822	38.13	2 153	45.06	803	16.81	4 778	15 855	52.42	8 801	29.10	5 592	18.49	30 248	8.7	4.1	1.75	0.97	0.62	3.34
190-249	Ear, Nose and Throat	3 113	25.48	6 168	50.48	2 938	24.04	12 219	15 835	35.27	18 922	42.14	10 145	22.59	44 902	5.1	3.1	1.75	2.09	1.12	4.96
250-299	Upper Alimentary Tract	1 266	22.67	1 699	30.43	2 619	46.90	5 584	9 158	51.54	3 654	20.62	4 947	27.84	17 769	7.2	2.2	1.01	0.40	0.55	1.96
300-349	Thorax	1 501	90.97	92	5.58	57	3.45	1 650	20 743	93.50	278	1.25	1 164	5.25	22 185	13.8	3.0	2.29	0.03	0.13	2.45
380-389	Breast	412	15.51	1 294	48.70	951	35.79	2 657	2 980	18.63	7 741	48.40	5 273	32.97	15 994	7.2	6.0	0.33	0.86	0.58	1.77
400-559	Abdomen	7 054	39.49	4 855	27.18	5 955	33.34	17 864	75 371	44.64	41 175	24.39	52 303	30.98	168 849	10.7	8.5	3.23	4.55	5.78	18.66
560-669	Urinary and Male Genital Organs	3 820	35.01	3 670	33.64	3 421	31.35	10 911	29 256	46.87	15 319	24.54	17 851	28.60	62 426	7.7	4.2	3.23	1.69	1.97	6.90
671-739	Female Genital Tract	3 003	14.35	6 826	32.61	11 104	53.05	20 933	19 889	20.29	33 439	34.12	44 677	45.59	98 005	6.6	4.9	2.20	3.69	4.94	10.83
740-779	Obstetric	4 195	36.07	3 232	27.79	4 204	36.14	11 631	31 925	35.61	26 566	29.63	31 170	34.76	89 661	7.6	8.2	3.53	2.94	3.44	9.91
780-879	Orthopaedic	6 651	43.09	4 343	28.14	4 440	28.77	15 434	95 580	58.80	25 405	15.63	41 562	25.57	162 547	14.4	5.8	10.56	2.81	4.59	17.96
880-909	Peripheral Circulation	904	37.02	922	37.76	616	25.23	2 442	10 962	45.87	7 584	31.73	5 352	22.40	23 898	12.1	8.2	1.21	0.84	0.59	2.64
910-939	Skin and Subcutaneous Tissue	3 631	28.81	4 015	31.85	4 958	39.34	12 604	29 581	42.54	17 734	25.50	22 224	31.96	69 539	8.1	4.4	3.27	1.96	2.46	7.68
940-999	Other Surgical Procedures	6 353	83.77	580	7.65	651	3.58	7 584	30 763	82.44	3 172	8.50	3 380	9.06	37 315	4.8	5.5	3.40	0.35	0.37	4.12
Total, All Operations		46 954	35.51	41 658	31.51	43 599	32.98	132 211	432 254	47.76	221 127	24.43	251 692	27.81	905 073	9.2	5.3	47.76	24.43	27.81	100.00

TABLE 17
W.A. HOSPITALS 1976—PATIENTS DISCHARGED BY OPERATION GROUP AND TYPE OF HOSPITAL

Code of Surgical Procedures	Operation Groups	Discharges												State Total		
		Metropolitan						Country								
		Teaching		Private		Government		Total		Private		Govt. and Board			Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		No.	%
001-049	Nervous System	2 709	52.34	1 648	31.84	523	10.10	4 880	94.28	28	0.54	268	5.18	296	5.72	5 176
061-089	Endocrine System	520	69.89	125	16.80	55	7.39	700	94.09	8	1.08	36	4.84	44	5.91	744
100-189	Eye	1 822	38.13	2 133	44.64	625	13.08	4 580	95.86	20	0.42	178	3.73	198	4.14	4 778
190-249	Ear, Nose and Throat	3 113	25.48	6 053	49.54	1 688	13.81	10 854	88.83	115	0.94	1 250	10.23	1 365	11.17	12 219
250-299	Upper Alimentary Tract	1 266	22.67	1 454	26.04	1 045	18.71	3 765	67.42	245	4.39	1 574	28.19	1 819	32.58	6 584
300-349	Thorax	1 501	90.97	91	5.52	39	2.36	1 631	98.85	1	0.06	18	1.09	19	1.15	1 650
380-389	Breast	412	15.51	1 235	46.48	688	25.89	2 335	87.88	59	2.22	263	9.90	322	12.12	2 657
400-559	Abdomen	7 054	39.49	4 528	25.35	3 401	19.04	14 983	83.87	327	1.83	2 554	14.30	2 881	16.13	17 864
560-669	Urinary and Male Genital Organs	3 820	35.01	3 445	31.57	2 039	18.69	9 304	85.27	225	2.06	1 382	12.67	1 607	14.73	10 911
671-739	Female Genital Tract	3 003	14.35	6 512	31.11	7 026	33.56	16 541	79.02	314	1.50	4 078	19.48	4 392	20.98	20 933
740-779	Obstetric	4 195	36.07	3 156	27.13	2 690	23.13	10 041	86.33	76	0.65	1 514	13.02	1 590	13.67	11 631
780-879	Orthopaedic	6 651	43.09	4 121	26.70	1 777	11.51	12 549	81.31	222	1.44	2 663	17.25	2 885	18.69	15 434
880-909	Peripheral Circulation	904	37.02	875	35.83	410	16.79	2 189	89.64	47	1.92	206	8.44	253	10.36	2 442
910-939	Skin and Subcutaneous Tissue	3 631	28.81	3 835	30.43	2 648	21.01	10 114	80.24	180	1.43	2 310	18.33	2 490	19.76	12 604
940-999	Other Surgical Procedures	6 353	83.77	524	6.91	228	3.01	7 105	93.68	56	0.74	423	5.58	479	6.32	7 584
	Total, All Operations	46 954	35.51	39 735	30.05	24 882	18.82	111 571	84.39	1 923	1.45	18 717	14.16	20 640	15.61	132 211

TABLE 18
W.A. HOSPITALS—ACCIDENTS, POISONING AND VIOLENCE—DISCHARGED DURING 1976

I.C.D. Category	External Cause	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			Deaths per 1 000 Separations
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	
800-807	Railway Accidents	22	3	477	73	21.7	24.3	0.18	0.03	25	....	....	....
810-819	Motor Vehicle Traffic Accidents	3 022	1 428	33 222	13 446	11.0	9.4	12.55	5.08	4 150	249	51	11
820-823	Motor Vehicle Non-Traffic Accidents	176	22	1 703	149	9.7	6.8	0.64	0.06	190	6	2	198
825-827	Other Road Vehicle Accidents	293	207	1 274	1 032	4.3	5.0	0.48	0.39	493	6	1	2
830-838	Water Transport Accidents	46	18	483	116	10.5	6.4	0.18	0.04	62	2	....	....
840-845	Air and Space Transport Accidents	13	....	180	....	13.8	....	0.07	....	13	....	....	....
850-859	Accidental Poisoning by Drugs and Medicaments	304	307	1 871	1 457	6.2	4.7	0.71	0.55	600	9	2	3
860-869	Accidental Poisoning by Other Solid and Liquid Substances	432	317	968	548	2.2	1.7	0.37	0.21	742	6	1	1
870-877	Accidental Poisoning by Gases and Vapours	50	17	100	41	2.0	2.4	0.04	0.02	66	1	....	....
880-887	Accidental Falls	4 174	3 080	31 408	39 382	7.5	12.8	11.87	14.88	6 810	373	71	9
890-899	Accidents Caused by Fires and Flames	521	275	5 618	2 742	10.8	10.0	2.12	1.04	742	45	9	11
900-909	Accidents due to Natural and Environmental Factors	594	354	1 552	1 520	2.6	4.3	0.59	0.57	934	12	2	2
910-929	Other Accidents	7 431	2 935	37 245	16 071	5.0	5.5	14.07	6.07	10 101	239	26	2
930-936	Surgical and Medical Complications and Misadventures	1 199	1 345	17 316	17 176	14.4	12.8	6.54	6.49	2 405	67	72	28
940-949	Late Effects of Accidental Injury	1 222	669	13 722	9 411	11.2	14.1	5.19	3.56	1 838	35	18	9
950-959	Suicide and Self-inflicted Injury	489	902	3 276	3 444	6.7	3.8	1.24	1.30	1 309	71	11	7
960-969	Homicide and Injury Purposely Inflicted by Other Persons	765	340	4 127	1 903	5.4	5.6	1.56	0.72	1 076	25	4	3
970-978	Legal Intervention	2	....	2	....	1.0	....	0.00	....	2	....	....	....
980-989	Injury Undetermined whether Accidentally or Purposely Inflicted	141	216	739	823	5.2	3.8	0.28	0.31	336	18	3	8
990-999	Injury Resulting from Operations of War	2	....	26	....	13.0	....	0.01	....	2	....	....	....
Total		20 898	12 435	155 309	109 334	7.4	8.8	58.69	41.31				
Grand Total, Male and Female		33 333	264 643	7.9		100.00		31 876		1 164	273	8	

TABLE 20
W.A. HOSPITAL DISCHARGES 1976
External Cause and Nature of Injury of Accidents, Poisoning and Violence

I.C.D. Code	External Cause of Injury	Patients Age and Hospital Stay	NATURE OF INJURY																														Total																																																																																																																																																															
			Fracture of Spine, Skull and Trunk		Fracture of Upper Limb		Fracture of Lower Limb		Dislocation Without Fracture		Sprains and Strains of Joints and Muscles		Intra-cranial Injury Without Skull Fracture		Internal Injury of Chest, Abdomen and Pelvis		Laceration and Open Wound of Head, Neck and Trunk		Laceration and Open Wound of Upper Limb		Laceration and Open Wound of Lower Limb		Laceration and Open Wound of Multiple Location		Superficial Injury		Contusion and Crushing With Intact Skin		Effects of Foreign Body		Burn			Injury to Nerves and Spinal Cord		Adverse Effect of Medicinal Agents		Adverse Effect of Non-Medicinal Substances		Other Adverse Effects																																																																																																																																																								
			N800-N809		N810-N819		N820-N829		N830-N839		N840-N848		N850-N854		N860-N869		N870-N879		N880-N887		N890-N897		N900-N907		N910-N918		N920-N929		N930-N939		N940-N949			N950-N959		N960-N979		N980-N989		N990-N999																																																																																																																																																								
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F																																																																																																																																																									
E800-807	Railway Accidents	Patients Avge. Age Avge. Stay	3 37 21·3	..... ..... .....	3 51 38·7	1 52 1·0	4 49 43·3	1 26 69·0	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	3 32 5·7	1 8 3·0	..... ..... .....	1 9 2·0	..... ..... .....	1 9 1·0	..... ..... .....	2 50 4·5	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	2 46 6·5	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	3 35 27·3	..... ..... .....	22 40 21·7	3 29 24·0																																																																																																																																		
E810-819	Motor Vehicle Traffic Accidents	Patients Avge. Age Avge. Stay	360 31 1·85	186 34 18·9	219 26 8·0	74 33 8·2	401 130 28·1	130 31 26·2	31 28 15·6	8 38 24·1	57 31 4·7	66 28 6·7	875 25 6·6	413 26 6·2	92 30 15·0	33 35 13·3	189 26 4·5	104 23 5·1	53 31 9·6	11 25 5·3	78 24 12·7	34 27 7·7	115 27 4·3	36 33 8·6	109 21 3·8	54 22 2·4	84 28 3·9	81 31 3·0	14 27 22·0	1 24 14·0	11 32 26·5	1 19 10·0	309 25 3·3	182 27 3·2	2 997 27 10·9	1 415 29 9·4																																																																																																																																																						
E820-823	Motor Vehicle Non-Traffic Accidents	Patients Avge. Age Avge. Stay	18 25 20·0	24 20 2·9	5 17 3·2	30 19 16·1	4 25 20·5	6 32 2·5	6 24 5·5	1 19 6·0	37 21 5·7	8 13 1·5	10 18 16·4	2 17 6·5	1 19 6·0	4 19 2·3	7 9 12·0	1 2 15·0	1 6 1·0	7 13 2·9	7 23 25·0	2 7 6·0	4 25 6·0	2 18 7·5	11 18 2·5	176 21 9·7	22 15 6·8																																																																																																																																																								
E825-827	Other Road Vehicle Accidents	Patients Avge. Age Avge. Stay	18 18 6·1	15 23 10·2	53 17 2·6	36 16 3·3	27 18 9·2	17 22 25·9	10 23 1·2	4 26 1·5	2 24 4·0	1 39 12·0	104 13 3·2	87 12 1·9	9 17 14·2	5 4 5·8	13 11 2·8	9 4 2·0	2 9 2·5	1 3 1·0	18 9 4·8	6 8 4·7	8 15 2·3	3 10 4·0	6 13 3·2	4 21 2·8	1 9 1·0	2 29 13·0	17 17 2·8	18 23 2·3	291 15 4·3	207 15 5·0																																																																																																																																																							
E830-838	Water Transport Accidents	Patients Avge. Age Avge. Stay	11 46 11·5	..... ..... .....	2 25 3·0	5 29 5·8	8 37 22·1	2 78 15·0	1 22 5·0	..... ..... .....	1 31 1·0	..... ..... .....	3 28 1·7	2 20 3·0	3 23 7·3	..... ..... .....	2 14 1·0	..... ..... .....	4 22 10·5	3 41 1·3	3 28 3·3	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	1 22 1·0	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	1 9 2·0	1 61 1·0	..... ..... .....	..... ..... .....	4 23 10·3	3 34 2·3	46 33 10·5	16 36 4·9																																																																																																																																											
E840-845	Air and Space Transport Accidents	Patients Avge. Age Avge. Stay	5 29 10·2	..... ..... .....	..... ..... .....	..... ..... .....	2 25 36·0	..... ..... .....	1 23 5·0	..... ..... .....	..... ..... .....	..... ..... .....	1 30 23·0	..... ..... .....	1 27 5·0	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	1 32 7·0	..... ..... .....	..... ..... .....	..... ..... .....	1 32 13·0	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	1 24 4·0	13 28 13·8	..... ..... .....																																																																																																																																																										
E850-859	Accidental Poisoning by Drugs and Medicaments	Patients Avge. Age Avge. Stay	1 80 1·0	275 10 5·2	265 12 2·9	3 1 1·3	4 1·5	279 10 5·1	270 13 2·9																																																																																																																																																				
E860-869	Accidental Poisoning by Other Solid and Liquid Substances	Patients Avge. Age Avge. Stay	1 44 6·0	1 31 4·0	1 11 3·0	2 1 2·0	2 6 1·0	420 31 2·2	310 3 1·7	425 6 2·2	312 3 1·7																																																																																																																																																				
E870-877	Accidental Poisoning by Gases and Vapours	Patients Avge. Age Avge. Stay	2 18 2·0	2 42 9·0	2 49 11·0	1 17 1·0	43 25 1·3	15 20 1·3	48 25 1·7	17 24 2·4																																																																																																																																																		
E880-887	Accidental Falls	Patients Avge. Age Avge. Stay	710 35 7·4	342 44 10·9	1 439 19 3·7	1 072 35 4·7	981 36 14·9	1 004 61 25·0	87 31 3·4	49 49 3·5	65 29 5·8	31 43 7·4	445 23 3·0	238 23 3·0	36 30 10·2	8 41 9·9	60 31 3·6	43 24 3·0	13 36 9·1	10 36 9·5	20 31 6·5	18 48 13·3	7 20 3·6	2 45 11·0	19 38 7·5	14 57 5·2	65 33 4·9	64 59 11·8	10 30 5·2	3 10 4·7<

TABLE 19
SEX-SPECIFIC HOSPITAL DISCHARGE RATES* FOR ACCIDENTAL INJURY (ICD 800-999)
W.A., 1971-1976

Year	Male			Female			Total		
	Number	Rate*	Rank†	Number	Rate*	Rank†	Number	Rate*	Rank†
1971	17 834	33·7	1	9 578	19·1	5	27 412	26·6	2
1972	18 569	34·4	1	10 456	20·4	4	29 025	27·6	3
1973	19 418	35·5	1	11 071	21·2	4	30 489	28·5	2
1974	19 951	35·7	1	11 174	20·9	4	31 125	28·4	1
1975‡	19 744	34·5	1	11 468	20·9	5	31 212	27·8	1
1976	19 621	33·8	1	11 386	20·2	5	31 007	27·1	1

* Rate per 1 000 population (1971 and 1976 Census, 1972-75 estimates, A.B.S.).
† Ranking of accidental injury in the 18 major groupings of the I.C.D., with (*) being the group with the most discharges, (†) the next largest group, etc.
‡ The drop in absolute numbers and rates in the male group occurred primarily in the 0-4 year age group.

TABLE 21
HOSPITAL DISCHARGES 1976—PERTH STATISTICAL DIVISION

Hospital Name				Type*	Number of Beds	Percentage of Metropolitan Bcds	Number of Discharges	Percentage of Metropolitan Discharges
Armadale/Kelmscott	....	....	....	3	71	1·45	3 955	2·25
Attadale	....	....	....	2	58	1·19	3 875	2·21
Avro	....	....	....	2	25	0·51	1 034	0·59
Bentley	....	....	....	3	70	1·43	3 549	2·02
Bethesda	....	....	....	2	58	1·19	2 540	1·45
Devonleigh	....	....	....	3	36	0·74	2 279	1·30
Fremantle	....	....	....	1	395	8·07	13 234	7·53
Harrow	....	....	....	5	15	0·31	186	0·11
Hawthorn	....	....	....	3	29	0·59	2 072	1·18
Kalamunda	....	....	....	3	65	1·33	2 589	1·47
Kaleeya	....	....	....	2	41	0·84	1 761	1·00
King Edward Memorial	....	....	....	1	233	4·76	9 090	5·18
Kwinana†	....	....	....	3	11	0·22	275	0·16
Lucknow	....	....	....	2	22	0·45	133	0·08
Martindale	....	....	....	5	22	0·45	393	0·22
Morna	....	....	....	2	24	0·49	1 400	0·80
Mount	....	....	....	3	93	1·90	4 503	2·56
Niola	....	....	....	5	14	0·29	113	0·06
Oats Street	....	....	....	2	44	0·90	2 700	1·54
Ord Street	....	....	....	3	26	0·53	386	0·22
Osborne Park	....	....	....	3	94	1·92	5 205	2·96
Princess Margaret	....	....	....	1	297	6·07	15 681	8·93
Quo Vadis	....	....	....	3	18	0·37	174	0·10
Repatriation	....	....	....	4	428	8·75	6 970	3·97
Rockingham-Kwinana†	....	....	....	3	74	1·51	1 372	0·78
Royal Perth	....	....	....	1	999	20·41	32 062	18·25
St. Anne's	....	....	....	2	232	4·74	7 561	4·30
St. John's, Belmont	....	....	....	2	116	2·37	3 945	2·25
St. John's, Subiaco	....	....	....	2	390	7·97	13 432	7·65
St. Joseph's, Bicton	....	....	....	2	37	0·76	1 955	1·11
Sir Charles Gairdner	....	....	....	1	544	11·12	15 065	8·58
South Perth Community	....	....	....	2	67	1·37	3 067	1·75
Stirling	....	....	....	2	78	1·59	5 404	3·08
Swan Districts	....	....	....	3	120	2·45	6 285	3·58
Woodside	....	....	....	3	40	0·82	1 259	0·72
Wooroloo	....	....	....	3	8	0·16	137	0·08
Total	....	....	....	....	4 894	100·00	175 641	100·00

* (1) Teaching Hospitals
(2) Private Hospitals
(3) Government and Board Hospitals
(4) Commonwealth Repatriation
(5) Special Private Hospitals
† Kwinana closed 28/5/76. Rockingham-Kwinana opened 28/5/76.

TABLE 22

PERTH STATISTICAL DIVISION, 1976

Hospitalised Non-Metropolitan Patients by Statistical Division of Residence and Type of Hospital

Statistical Division of Residence	Discharges				
	Number	Per Cent			
		Total	Teaching	Other Govt. and Board	Private
South West	4 778	19·53	13·57	1·29	4·67
Lower Great Southern	1 768	18·13	10·50	1·71	5·92
Upper Great Southern	1 288	13·82	7·51	1·28	5·03
Midlands	3 774	24·95	12·12	4·47	8·36
South Eastern	1 962	15·30	9·13	1·00	5·17
Central	2 789	19·10	10·72	2·12	6·26
Pilbara	2 085	19·08	11·13	2·05	5·90
Kimberley	563	8·70	6·88	0·31	1·51

TABLE 23

DISCHARGES FROM W.A. HOSPITALS

BY STATISTICAL DIVISION OF RESIDENCE†

Statistical Division	Number*	Rate/1 000 Population
Perth	157 461	192
South West	24 459	290
Lower Great Southern	9 750	244
Upper Great Southern	9 322	386
Midlands	15 129	291
South Eastern	12 823	312
Central	14 604	294
Pilbara	10 925	273
Kimberley	6 468	415
Metropolitan (Perth)	157 461	192
Rural (All Others) <i>1/</i>	103 480	298
Total State*	260 941	223

* Does not include 2 201 discharges for which Geographical Location was inaccurate or incomplete. Total Discharges for State in 1976 were 263 142.

† New (Australian Bureau of Statistics) Statistical Divisions were established in 1976.

WESTERN AUSTRALIA 1976

HOSPITAL DISCHARGE RATES BY
STATISTICAL DIVISION OF RESIDENCE

Rates per 1 000 population



TABLE 25
 GEOGRAPHICAL LOCATION OF IN-PATIENT HOSPITAL CARE BY PATIENTS
 RESIDENCE, W.A.—1976

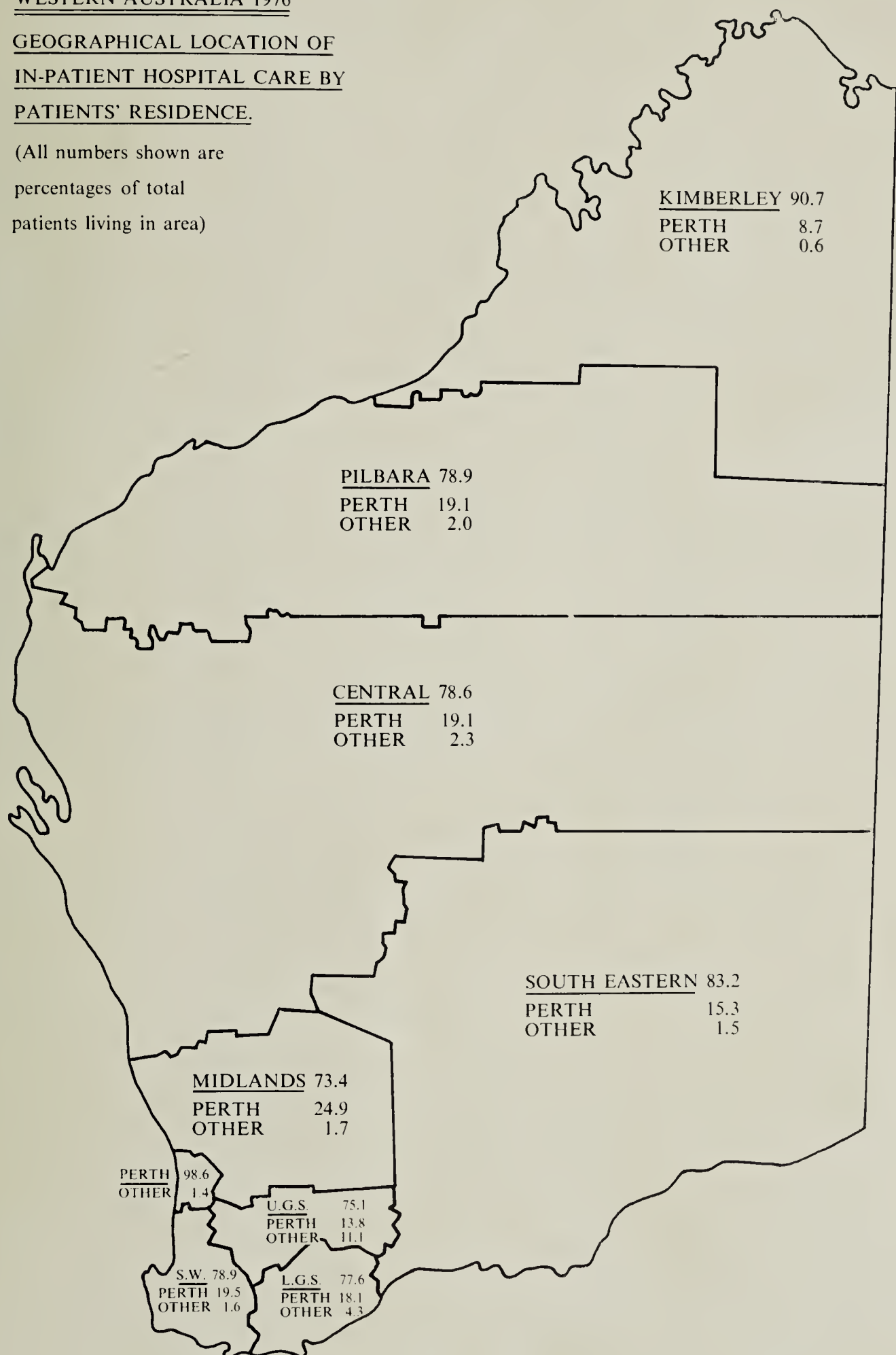
Statistical Division of Residence	Statistical Division of Hospitalisation		
	Home %	Perth %	Other %
Perth ....	....	98·63	1·37
South West	78·93	19·53	1·54
Lower Great Southern	77·58	18·13	4·29
Upper Great Southern	75·14	13·82	11·04
Midlands	73·36	24·95	1·69
South Eastern	83·16	15·30	1·54
Central	78·62	19·10	2·28
Pilbara	78·87	19·08	2·05
Kimberley	90·71	8·70	0·59

TABLE 26

WESTERN AUSTRALIA 1976

GEOGRAPHICAL LOCATION OF
IN-PATIENT HOSPITAL CARE BY
PATIENTS' RESIDENCE.

(All numbers shown are
percentages of total
patients living in area)



Appendix XVIII

INCIDENCE AND MORTALITY OF NOTIFIABLE DISEASES

Diseases Notifiable	1973		1974		1975		1976	
	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths†	Cases Notified	Deaths
Amoebiasis	2	....	2	....	3	....	4	1
Ancylostomiasis ....	....	....	3	....	3	1	20	....
Anthrax ....	....	....	....	....	....	....	....	....
Bacillary Dysentery	212	....	165	....	159	1	134	....
Bilharziasis ....	....	....	2	....	....	....	....	....
Brucellosis	1	....	2	....	1	....	....	....
Cholera ....	....	....	....	....	....	....	....	....
Diphtheria	5	1	....	....	....	....	....	....
Encephalitis Lethargic ....	....	....	....	2	....	1	....	1
Filariasis	1	....	C.O.S. 1	....	....	....	....	....
Homologous Serum Jaundice ....	....	....	....	....	....	....	12	....
Hydatid	1	....	....	1	....	2	....	....
Infective Hepatitis	165	3	247	1	258	2	272	6
Leprosy	12	2	17	3	15	1	20	....
Leptospirosis	3	....	1	....	2	....	1	....
Malaria	C.O.S. 9	....	C.O.S. 4	....	C.O.S. 24	....	C.O.S. 14	....
Meningococcal Infection	7	2	2	5	3	....	12	1
Ornithosis ....	....	....	....	....	....	....	....	1
Paratyphoid	1	....	....	....	....	....	1	....
Plague ....	....	....	....	....	....	....	....	....
Poliomyelitis ....	....	2	....	....	....	1	....	....
Puerperal Fever	1	....	....	....	1	2	2	....
Relapsing Fever ....	....	....	....	....	....	....	....	....
Salmonella Infection (A)	311	2	149	1	159	1	166	....
Scarlet Fever	10	....	8	....	1	....	4	....
Small Pox ....	....	....	....	....	....	....	....	....
Tetanus ....	....	....	....	....	....	1	....	....
Tuberculosis	*146	13	137	10	166	17	110	4
Typhus Fever ....	....	....	....	....	....	....	....	....
Typhoid Fever ....	....	....	1	....	....	....	....	....
Yellow Fever ....	....	....	....	....	....	....	....	....

C.O.S. — Contracted out of State
(A) Other salmonella infection

† Preliminary
* Includes three transfers from other States.

Appendix XIX

TABLE 1
VITAL STATISTICS (BIRTHS, DEATHS) (a)

	1971	1972	1973	1974	1975	1976
Mean Population—						
Males	537 000	550 600	559 600	572 600	585 900	596 808
Females	507 100	521 800	532 300	546 100	561 300	573 554
Births—						
Males	12 498	11 337	10 557	10 282	10 460	10 663
Females	11 741	10 840	9 953	9 925	9 878	10 007
Total	24 239	22 177	20 510	20 207	20 338	20 670
Birth rate per 1 000 of Mean Population	23·22	20·68	18·78	18·06	17·73	17·66
Deaths—						
Males	4 536	4 317	4 586	4 550	4 701	4 480
Females	3 270	3 124	3 259	3 228	3 271	3 260
Total	7 806	7 441	7 845	7 778	7 972	7 740
Death rate per 1 000 of Mean Population	7·48	6·94	7·18	6·95	6·95	6·61
Natural increase rate per 1 000 of Mean Population	15·74	13·74	11·60	11·11	10·78	11·05
Infant Mortality per 1 000 Live Births—						
Perth Statistical Division	17·0	13·1	16·0	13·1	11·2	10·9
Rest of State	23·2	20·6	25·1	22·2	17·5	17·4
Whole of State	19·1	15·7	19·2	16·2	13·3	13·2
Stillbirths (b)—						
Perth Statistical Division	194	173	173	(c) 170	146	156
Whole State	298	258	270	274	236	242
Stillbirth rate per 1 000 total births	12·15	11·50	12·99	13·38	11·47	11·6

(a) Includes events among the total population, including Aborigines.
(b) The term “stillbirth” for registration purposes refers to a child not born alive, of at least 20 weeks gestation, or at least 400 grammes weight.
(c) Revised.
Note: Rates have been revised as a result of preliminary revision to the mean populations on which they are based.

TABLE 2
WESTERN AUSTRALIA STILLBIRTH AND BIRTH RATES (a)

Year	Mean Population Year Ended 31st December	Live Births		Stillbirths (b)		Total Births	
		Number	Rate per 1 000 Mean Population	Number	Rate per 1 000 Total Births	Number	Rate per 1 000 Women Aged 15–44
1953	621 034	15 862	25·54	268	16·62	16 130	124·2
1954	639 963	15 928	24·89	270	16·67	16 198	122·1
1955	657 323	16 623	25·29	239	15·17	16 862	124·8
1956	674 459	16 916	25·08	226	13·18	17 142	125·0
1957	687 448	16 924	24·62	248	14·44	17 172	124·0
1958	699 915	16 731	23·90	225	13·27	16 956	121·2
1959	711 737	17 111	24·04	225	12·98	17 336	122·9
1960	722 900	16 926	23·41	226	13·18	17 152	120·6
1961	737 596	17 078	23·15	240	13·86	17 318	118·8
1962	766 205	17 064	22·58	203	11·76	17 267	114·1
1963	788 457	17 290	22·23	178	10·19	17 468	111·5
1964	808 300	16 685	20·93	170	10·09	16 855	104·5
1965	826 481	16 186	19·85	181	11·06	16 367	98·1
1966	849 112	17 194	20·25	174	10·02	17 368	99·5
1967	879 815	18 023	20·48	188	10·32	18 211	99·3
1968	915 757	19 541	21·34	243	12·28	19 784	102·4
1969	955 660	20 754	21·72	250	11·90	21 004	103·5
1970	994 201	21 618	21·74	295	13·46	21 913	103·2
1971	(c) 1 044 100	24 239	(c) 22·60	298	12·15	24 537	111·5
1972	(c) 1 072 400	22 177	(c) 21·84	258	11·50	22 435	99·7
1973	(c) 1 091 900	20 510	(c) 19·52	270	12·99	20 780	89·9
1974	(c) 1 118 700	20 207	(c) 18·41	274	13·38	20 481	85·5
1975	(c) 1 147 200	20 336	(c) 17·97	236	11·47	20 574	83·0
1976	(c) 1 170 400	20 670	(c) 17·66	242	11·57	20 912	82·8

(a) Mean Population: Figures prior to 1962 exclude full-blood Aborigines.
Births: For 1965 and earlier years figures exclude full-blood Aborigines; from 1966 Aborigines are included.
A line drawn across the columns indicated a break in the series.
Birth rates from 1966 have been revised in accordance with the final results of the 1971 Census.
(b) From 1st January, 1968 the term “stillbirth” for registration purposes, refers to a child of at least 20 weeks gestation, not born alive. Previously it was restricted to cases where the gestation period was at least 28 weeks.
(c) Preliminary.

TABLE 3
STILLBIRTH AND INFANT MORTALITY RATES W.A. (a)

Year				Total Births Including Stillbirths	Stillbirth Rates	Under One Week	Mortality Rates Under One Month	One Month and Under One Year	Total Mortality Rates Under One Year	Total Mortality Rates Under One Year Including Stillbirths
1949	....	....	....	13 779	19.4	16.2	19.0	6.8	25.9	45.3
1950	....	....	....	14 468	16.6	16.2	18.0	8.6	26.7	43.3
1951	....	....	....	15 091	19.7	16.2	19.7	8.5	28.2	47.9
1952	....	....	....	15 697	18.1	15.5	17.7	6.9	24.5	42.6
1953	....	....	....	16 130	16.6	13.4	16.2	7.3	23.4	40.0
1954	....	....	....	16 198	16.7	14.2	15.8	6.4	22.2	38.9
1955	....	....	....	16 862	14.2	13.3	15.8	6.3	22.1	36.3
1956	....	....	....	17 142	13.2	13.0	15.7	6.7	22.4	35.6
1957	....	....	....	17 172	14.4	13.6	14.9	5.9	20.8	35.2
1958	....	....	....	16 956	13.3	12.8	14.2	7.1	21.2	34.5
1959	....	....	....	17 336	13.0	12.3	13.6	6.3	19.9	32.9
1960	....	....	....	17 152	13.2	13.9	15.7	5.7	21.3	34.5
1961	....	....	....	17 318	13.9	10.3	12.6	6.8	19.4	33.3
1962	....	....	....	17 267	11.8	12.6	14.3	7.7	22.0	33.8
1963	....	....	....	17 468	10.2	12.3	14.7	5.5	20.2	30.4
1964	....	....	....	16 855	10.1	11.8	12.9	6.6	19.5	29.5
1965	....	....	....	16 367	11.1	12.8	15.0	6.5	21.4	32.5
1966	....	....	....	17 368	10.0	12.4	14.4	5.4	19.7	29.8
1967	....	....	....	18 211	10.3	11.4	13.0	4.3	17.2	27.6
1968	....	....	....	19 784	12.3	13.3	14.7	5.5	20.1	32.3
1969	....	....	....	21 004	11.9	13.9	15.3	6.2	21.6	33.5
1970	....	....	....	21 913	13.5	12.4	14.4	6.6	20.9	34.4
1971	....	....	....	24 537	12.1	11.0	12.4	6.5	18.9	31.1
1972	....	....	....	22 435	11.5	9.2	10.3	5.2	15.5	27.0
1973	....	....	....	20 780	13.0	10.9	12.7	6.3	19.0	32.0
1974	....	....	....	20 481	13.4	9.1	10.6	5.3	16.0	29.3
1975	....	....	....	20 574	11.5	8.0	9.0	4.1	13.2	24.6
1976	....	....	....	20 912	11.6	7.2	8.4	4.6	13.1	24.6

(a) For 1965 and earlier years, exclude Full-blood Aborigines. From 1966, Aborigines are included. In above table all rates are calculated in deaths per 1 000 total births, including stillbirths.
For 1968 and later years, the term "stillbirth" refers to a child of at least 20 weeks gestation or birth weight of at least 400 grams not born alive. Prior to 1968, "stillbirth" referred to a child of at least 28 weeks gestation, not born alive.

TABLE 4
INFANT MORTALITY* W.A., 1949-76

Year				Live Births	Infant Mortality Per 1 000 Live Births
1949	....	....	....	13 511	26.4
1950	....	....	....	14 228	27.1
1951	....	....	....	14 794	28.7
1952	....	....	....	15 413	24.9
1953	....	....	....	15 862	23.8
1954	....	....	....	15 928	22.5
1955	....	....	....	16 623	22.4
1956	....	....	....	16 916	22.7
1957	....	....	....	16 924	21.1
1958	....	....	....	16 731	21.5
1959	....	....	....	17 111	20.2
1960	....	....	....	16 926	21.6
1961	....	....	....	17 078	19.7
1962	....	....	....	17 064	22.3
1963	....	....	....	17 290	20.4
1964	....	....	....	16 685	19.7
1965	....	....	....	16 186	21.7
1966	....	....	....	17 194	19.9
1967	....	....	....	18 023	17.4
1968	....	....	....	19 541	20.4
1969	....	....	....	20 754	21.8
1970	....	....	....	21 618	21.2
1971	....	....	....	24 239	19.1
1972	....	....	....	22 177	15.7
1973	....	....	....	20 510	19.2
1974	....	....	....	20 207	16.2
1975	....	....	....	20 338	13.3
1976	....	....	....	20 670	13.2

* For 1965 and earlier years, exclude full-blood Aborigines. From 1966 Aborigines are included.
Infant mortality defined as deaths occurring from birth to one year of age.

TABLE 5
STILLBIRTH AND INFANT MORTALITY RATES (a) (b)
AUSTRALIA AND NEW ZEALAND

Area of Registration	Total Births Including Stillbirths (c)	Stillbirth Rates (c)	Infant Mortality Rates				Total Mortality Infant Deaths and Stillbirths
			Under one Week	Under one Month	One Month and Under One Year	Total Under One Year	
1975— New Zealand	57 111	8.3	8.3	9.6	6.2	15.8	24.1
1976— Western Australia	20 912	11.6	7.2	8.4	4.6	13.1	24.6
New South Wales	79 326	10.5	9.5	10.6	3.9	14.5	25.0
Victoria	61 283	10.1	6.9	8.3	3.1	11.5	21.5
Queensland	35 546	8.5	10.0	11.4	3.6	15.1	23.6
Tasmania	6 803	14.8	5.6	6.2	5.1	11.3	26.2
South Australia	19 157	11.0	8.7	10.0	4.4	14.4	25.4

(a) Rates calculated per 1 000 total births, including stillbirths.
(b) Infant mortality refers to deaths which occur from birth to one year of age.
(c) The term “stillbirth” refers to a child, not born alive, of at least 20 weeks gestation, or at least 400 grammes weight for all Australian States and of at least 28 weeks gestation for New Zealand.

TABLE 6
MATERNAL MORTALITY RATES PER THOUSAND LIVE BIRTHS
AUSTRALIA AND NEW ZEALAND 1967–76

Place	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Western Australia	0.11	0.26	0.14	0.14	0.12	0.14	0.24	0.10	0.10	0.15
New Zealand (a)	0.17	0.24	0.20	0.22	0.22	0.14	0.19	0.17	0.20	N.A.
New South Wales	0.24	0.34	0.17	0.25	0.15	0.10	0.08	0.14	0.40	0.11
Victoria	0.20	0.20	0.14	0.25	0.23	0.10	0.04	0.03	0.06	0.15
Queensland	0.26	0.31	0.22	0.21	0.25	0.15	0.29	0.16	Nil	0.14
Tasmania	0.27	0.48	0.12	0.37	Nil	0.13	Nil	0.14	Nil	0.30
South Australia	0.20	0.14	0.32	0.31	0.22	0.18	0.10	0.20	0.15	0.05

(a) Non-Maori. N.A. — Not Available.

TABLE 7
MATERNAL MORTALITY

Period	Average Annual Live Births	Average Annual Maternal Deaths	Average Annual Rate
1901–1905	6 681	28.0	4.19
1906–1910	7 691	43.4	5.64
1911–1915	8 844	39.4	4.46
1916–1920	7 726	41.4	5.36
1921–1925	8 056	34.2	4.25
1926–1930	8 748	46.8	5.35
1931–1935	8 062	35.4	4.39
1936–1940	8 877	32.4	3.65
1941–1945	10 408	24.4	2.34
1946–1950	13 130	21.4	1.63
1951–1955	15 724	13.8	0.88
1956–1960	16 922	8.2	0.48
1961–1965	16 861	5.0	0.30
1966–1970	19 426	4.0	0.21
1971–1975	21 494	3.0	0.14

TABLE 8

Year			Live Births	Deaths from									
				Puerperal Septicaemia		Other Puerperal Infection		Abortion		All Other Complications of Pregnancy and of the Puerperal State		All Complications of Pregnancy and the Puerperal State	
				No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1949	....	....	13 511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	....	....	14 288	....	....	2	0·14	1	0·07	10	0·70	13	0·91
1951	....	....	14 794	....	....	2	0·14	3	0·20	11	0·74	16	1·08
1952	....	....	15 413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	....	....	15 862	....	....	....	....	1	0·06	8	0·50	9	0·57
1954	....	....	15 928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	....	....	16 623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	....	....	16 916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	....	....	16 924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	....	....	16 731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	....	....	17 111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	....	....	16 926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	....	....	17 078	....	....	....	....	2	0·12	5	0·29	7	0·41
1962	....	....	17 064	....	....	....	....	1	0·06	4	0·23	5	0·29
1963	....	....	17 290	....	....	....	....	1	0·06	3	0·17	4	0·23
1964	....	....	16 685	....	....	....	....	3	0·18	3	0·18	6	0·36
1965	....	....	16 186	....	....	....	....	1	0·06	2	0·12	3	0·19
1966	....	....	17 194	....	....	....	....	1	0·06	6	0·35	7	0·41
1967	....	....	18 023	....	....	....	....	....	....	2	0·11	2	0·11
1968	....	....	19 541	....	....	....	....	....	....	5	0·26	5	0·26
1969	....	....	20 754	....	....	....	....	....	....	3	0·14	3	0·14
1970	....	....	21 618	....	....	....	....	....	....	3	0·14	3	0·14
1971	....	....	24 239	1	0·04	....	....	....	....	2	0·08	3	0·12
1972	....	....	22 177	....	....	....	....	1	0·05	2	0·09	3	0·15
1973	....	....	20 510	....	....	....	....	....	....	5	0·24	5	0·24
1974	....	....	20 207	1	0·05	....	....	....	....	1	0·05	2	0·10
1975	....	....	20 338	2	0·10	....	....	....	....	....	....	2	0·10
1976	....	....	20 670	....	....	....	....	....	....	3	0·15	3	0·15

(All rates per thousand live births)

TABLE 9
COMPARISON OF INFANT MORTALITY AND GENERAL DEATH RATE
AUSTRALIA AND NEW ZEALAND 1972-1976

Place			Infant Mortality Rate (a)					General Death Rate (c)				
			1972	1973	1974	1975	1976	1972	1973	1974	1975	1976
New Zealand (b)	....	....	15·6	16·2	15·5	16·0	N.A.	8·50	8·50	8·30	8·14	N.A.
Western Australia	....	....	15·7	19·2	16·2	13·3	13·2	6·94	7·18	6·95	6·95	6·61
New South Wales	....	....	17·5	17·1	16·6	15·2	14·7	8·79	8·59	9·10	8·29	8·57
Victoria	....	....	14·4	14·3	14·9	13·0	11·6	8·31	8·44	8·38	7·92	8·21
Queensland	....	....	17·8	17·5	15·7	15·0	15·2	8·67	8·47	8·91	7·89	8·18
South Australia	....	....	16·8	18·7	15·5	11·1	14·6	8·12	8·07	8·28	7·94	7·92
Tasmania	....	....	16·2	13·5	16·2	18·3	11·5	8·20	8·44	8·71	8·25	8·31

N.A. Denotes not available.
(a) Infant deaths per thousand live births. (Deaths under one year of age.)
(b) Includes Maoris.
(c) Rates have been revised as a result of preliminary revision to the mean population on which they are based.

Appendix XX

Public Health Department – Revenue and Expenditure

EXPENDITURE FOR YEAR ENDED 31/12/76

	\$
1. SALARIES Including Administration and other Health Services	2 532 528
2. ADMINISTRATION EXPENSES	281 053
3. PAYROLL TAX	634 413
4. GOVERNMENT PRINTER	45 402
5. CHILD HEALTH SERVICES—	
Salaries	2 382 884
Generally	286 653
	2 669 537
6. DENTAL HEALTH SERVICES—	
Salaries	2 815 949
Generally	249 258
Therapy Centres	134 229
Training Centres	163 326
Dental Clinics	253 445
	3 616 207
7. EPIDEMIOLOGY—	
Salaries	139 380
Generally	50 227
	189 607
8. COMMUNITY HEALTH SERVICES—	
Salaries	2 912 674
Generally	1 692 888
	4 605 562
9. COMMUNITY HEALTH PROGRAMME—	
Salaries	1 297 709
Generally	650 733
	1 948 442
10. LABORATORIES—	
Salaries	4 030 069
Laboratory Cadets	14 424
Generally	2 161 013
	6 205 506
11. OTHER HEALTH SERVICES—	
Pharmaceutical Services	11 196
Health Services Centre	91 128
Statistics	69 095
Health Surveyors and Inspectors	61 919
Pest Control	8 490
Occupational Health	18 750
Clean Air Act	57 628
Abatement of Noise	43 784
Radioactive Substances	214
Physics Division	17 697
V.D. Control	18 817
Library	44 939
Poliomyelitis	1 401
Miners X-Rays	39 124
Pre-School Day Care	1 086
Health Services Planning and Research	26 770
Poisons Information Centre	Nil
Chiropody Services	16 636
Infectious Diseases	Nil
Guthrie Testing—R.P.H.	16 692
Food and Nutrition	2 014
Ord River Ecology	72 329
Post Graduate Dental Commission	1 500
	621 209
12. T.B. CONTROL—	
Salaries	505 263
Payroll Tax	22 858
Generally	248 212
Recoup—Sir Charles Gairdner	34 850
	811 183
GRAND TOTAL	\$ 24 160 649

N.B.—The base year cost of Tuberculosis Control (\$155 702) which is the States contribution and payable from the Health Vote, has not been shown under the C.R.F. Expenditure items, nor has it been included in the Revenue Statement under the Tuberculosis item.

REVENUE FOR YEAR ENDED 31/12/76

								\$	\$
LICENSES—									
Anatomy	....	....	....	....	....	....	....	189	
Fumigation	....	....	....	....	....	....	....	44	
Maternity Homes	....	....	....	....	....	....	....	116	
Poisons Act	....	....	....	....	....	....	....	8 956	
Radioactive Substances Act	....	....	....	....	....	....	....	1 476	
Optical Dispensers	....	....	....	....	....	....	....	10	
Private Hospitals	....	....	....	....	....	....	....	3 704	
Clean Air Act	....	....	....	....	....	....	....	13 903	
									28 398
FEES—									
Fish Inspection	....	....	....	....	....	....	....	6 374	
Meat Inspection	....	....	....	....	....	....	....	506 159	
Building Inspection	....	....	....	....	....	....	....	4 719	
Perth Medical Officers	....	....	....	....	....	....	....	1 318	
Pest Control Collections	....	....	....	....	....	....	....	1 657	
Pesticides Registration	....	....	....	....	....	....	....	3 776	
Photographic Charges	....	....	....	....	....	....	....	Nil	
Sanitary Fixtures	....	....	....	....	....	....	....	Nil	
Septic Tank Plans	....	....	....	....	....	....	....	52 733	
									576 736
MISCELLANEOUS—									
Other	....	....	....	....	....	....	....	97 243	
Staff Rents	....	....	....	....	....	....	....	37 728	
Sale of Biscuits	....	....	....	....	....	....	....	415	
Recoup of V.D. Costs	....	....	....	....	....	....	....	231 724	
Miners X-Ray Recoups	....	....	....	....	....	....	....	3 600	
Busselton Health Centre	....	....	....	....	....	....	....	6 874	
Mandurah Health Centre	....	....	....	....	....	....	....	6 712	
Sale of Publications—Noise Abatement	....	....	....	....	....	....	....	64	
Commonwealth Grant	....	....	....	....	....	....	....	11 257 820	
									11 642 180
LABORATORIES—Fees and Services	....	....	....	....	....	....	....		121 068
DENTAL—Fees	....	....	....	....	....	....	....		316 464
TUBERCULOSIS CONTROL—									
Maintenance Recoup from Commonwealth	....	....	....	....	....	....	....	371 762	
Capital Recoup from Commonwealth	....	....	....	....	....	....	....	Nil	
Administration	....	....	....	....	....	....	....	50 131	
									421 893
GRAND TOTAL	....	....	....	....	....	....	....		\$ 13 106 739

